

METHOD



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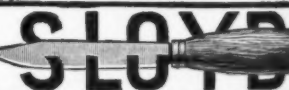
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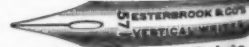
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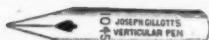
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THE SCHOOL JOURNAL

A Weekly Journal of Education.

Vol. LII.

For the Week Ending May 23.

No. 21

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The business department of THE JOURNAL is on another page.

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The Age of Mann.

The celebration of Horace Mann's centennial cannot but set a good many to thinking—who never thought before. In 1796 a man was born who had a great deal to do with the educational revival now in progress in America; he was born just when Pestalozzi had absolutely set on foot an astounding movement in education, which was no less than a turning round of the car of education in reality. The awful uprising of the down-trodden French had spent much of its force—the worst part of it at all events—and the little Corsican was being developed as an unparalleled actor in a bloody drama that ended only at Waterloo.

On arriving at the age of forty-one, this personage, who had as yet shown no evidence of special interest in education, was chosen as secretary of the Massachusetts state board of education; it was at once apparent that he was not to become a mere drawer of a salary, but that he had found the place in life his Creator had fitted him for. Some would say that the place had found the man; others would take the Creator out of the matter entirely and say that Horace Mann had been fitted by his past environment for the new, which does not often happen.

It was not possible for Mr. Mann to lift up the common schools without hurting some one; the persons who objected were the principals of the academies, institutions which then abounded. It may seem strange that New England in 1837 did not care a fig for the common schools, and that they needed a missionary of the peculiar type presented by the new secretary. The fact is that the prevailing conception of education everywhere in the commonwealth was a low and inferior one; the school was a place where children were made to mind; if a big boy was knocked down, the community said, "Served him right;" men of crude development held sway and supposedly made thorough work of the 3 R's.

That age may be described as the age that misconceived education; a personage had arrived who demanded that it be considered and understood that the school-master of the type then existing was a hard subject to convert; he knows just enough for to-day and does not care for the to-morrow of education. To learn the tables, to spell, to read, to write a plain hand, to do

the sums in the arithmetic, and in a later stage also to parse were the ends aimed at, ostensibly. It was not difficult to find men who seemed to the astute school committee able to do this; but, nevertheless it was apparent that the schools were retrograding. Horace Mann saw the reason; it was later stated by Emerson that the *what* was not so important as the *who with* in education.

Gradually Horace Mann caused the people of Massachusetts to believe in education; he set a movement on foot that has not yet expended its force. As an example, the question has this year been asked in Boston, Are the schools healthy? and to make reply in the affirmative \$300,000 has been allowed for that item alone; and this is accompanied with the assurance that if a million is needed a million will be forthcoming. But this is 1896; it took sixty years for the preaching of Horace Mann to strike into the depth expressed by the appropriation above named. But this is but one of the effects produced by one man's believing in education.

It was plainly apparent to this deep and firm believer in education in 1837 that the highest person in the community is the one who can teach rightly, that the great mistake was being made of putting common men into the teacher's place. This is the mistake of 186, and this mistake will require a hundred years for its eradication. Certain men in ancient days, it will be remembered, were asked if they had received the Holy Spirit and they said they had not heard there was such a thing as the Holy Spirit. In the schools of Massachusetts in 1837 they did not trouble themselves to have the children catch the spirit of the master put over them; they had not heard that that was essential.

We are in a transition period; the head is of gold, but the feet of miry clay. There is considerable belief that something ought to be accomplished besides a thorough knowledge of the 3 R's. Just what that is but few are willing to say. Massachusetts has the spirit of Horace Mann, and is determined that her teachers shall not be the odds and ends that once held sway in a majority of her schools. It will be but a few years before all her teachers will be required to be college or normal school graduates. Nor is she afraid of "fads;" to the three R's she has added ten or more subjects. A good beginning has been made in celebrating the centennial of her distinguished son; let us be glad that we live in an age that believes in him.

Why was Horace Mann so successful? This question will be asked over and over; it is the question that comes up concerning the work of all men who really accomplish something more than others. Why was he more successful than thousands of men of equal talents who have occupied since his time the post of superintendents in important places? There must be a reason for the success of one and the non-success of the other.

And here we mean by success the impressing of the central ideas of the man himself on his work; we do not mean that others have not performed their work with faithfulness and intelligence.

The answer is that Horace Mann had a mission and he undertook to accomplish it without reference to the salary gained. Who else have had missions in education here in America? Certainly David P. Page had; but his life came to an untimely end. His mission was to substitute a rational method of instruction for the hard mechanical routine that then prevailed and which a good many look back longingly to even in these days—or pretend to. His aim was quite a different one from that of Horace Mann, though he was his favorite disciple.

The man that has come nearest to having an educational mission since the days of Mann and Page is undoubtedly Francis W. Parker. Mann, Page, and Parker all originated in New England—the birthplace of reformers of every type. Parker followed the lead of Page with a fuller knowledge of the aim of Pestalozzi, added to what Froebel had discovered; his theme had been, How the child is to be educated considering the environment the Creator has placed around him.

Parker had the missionary spirit; the sympathy with child which was essentially necessary, but he lacked in the power to speak as Mann and Page could—both natural orators. Then he set himself down to the task of showing how his ideas could be worked out practically; but here difficulties arose. A man constituted as he is should not have been limited by a board of officials who came into power by popular votes; for work such as he would undertake must necessarily be largely experimental.

Probably half of Colonel Parker's power has been lost because of his environment. He should have had an opportunity such as the Teachers college of this city has afforded; and it would be a fortune to the cause of education if a similar school was founded here and Col. Parker placed at its head.

The great obstacle in the way of men with educational missions is the salary. Where a man looks at a place with an eye to the salary that is paid, the mission has already gone out of him. A man who appeared to have something to say on education was asked to write, and a price was named. His reply was, "I am very busy; the price you name is only half large enough." This showed that he began to measure the spirit by dollars and cents; of course he soon lost his hold on those who looked to him as the coming man in education.

The reader may plead that educational missionaries must be fed and all that; the case is not one for argument. If a man chooses a salary well and good, there is nothing wrong in that; but if he feels he has a mission and must discharge that mission we must counsel him not to ask, "How much am I going to get?" For that will end his career then and there.

Another man who has much more of the missionary spirit than is generally suspected is William T. Harris—also of New England origin. But Dr. Harris is too essentially a philosopher to be a missionary; his sympathies are too broad—he aims at the whole race. Yet he is a man of large self-forgetfulness; he is a philosophical altruist. The tendency now is to dispense with the question of sympathy with the child and to study him philosophically; the age of Horace Mann is about over.

School-Room Fatigue.

By S. B. SINCLAIR.

(Concluded.)

Fourth question: To what extent does change of subject take the place of rest? The usual answer is, Change of subject when the change is radical rests in the same way as change of position, *e. g.*, a change from a thought subject, such as arithmetic, to a manual one, such as drawing, affords relaxation. A primary teacher writes, "An entire change of subject is as good as a rest, often better."

Change of subjects requiring similar activity of mind, *e. g.*, arithmetic and algebra, affords but little rest.

Change of subject after much fatigue does not furnish rest to any great extent.

Of 95 teachers, 90 answer that in fatigue they reach a point where change of subject does not afford rest.

Fifth question: What results follow from detention at intermission or after school? Some answer, "Pupils detained at intermission and after school are less able to do good work, unable to concentrate attention, restless, show that they feel aggrieved, stubborn."

"Perfunctory work sullen and spiritless manner, loss of elasticity and responsiveness follow as a rule."

There is great difference of opinion. One teacher says, "Detention after school is a mistake mentally and morally." Another says, "Detention is the proper remedy for lateness or carelessness. Pupils accept it as the discipline of consequence and no evil results follow." All agree that if pupils are detained at intermission they should be given time for physical exercise apart from the class at another time.

In answer to the question, Do you find detention at intermission unsatisfactory? 81 out of 94 answer yes.

Sixth question: How much time should be devoted to intermission and how should this time be distributed throughout the day to secure the best results for your class?

Some answer, "For young children short recesses at least every hour."

"For older pupils one recess of fifteen minutes in forenoon and one in afternoon."

"A short recess of five minutes every hour, provided pupils could have access to play-grounds or gymnasium."

Some allow two or three minutes at end of each period for change of position, when pupils are allowed to communicate, etc. One teacher recommends for intermediate pupils from 9.00 A. M. to 4.00 P. M. for working hours with $2\frac{1}{2}$ hours recess as follows: 9.50-10.00, 10.50-11.00, 12.00-2.00, 2.50-3.00.

To the question, Do you think that in country and village schools as much work would be accomplished in the day if there were one and one-half hours noon intermission instead of one hour? 59 teachers answered yes, and 34 answered no.

The problem regarding the proper length of the school day (notwithstanding the experiments of Dukes Birkenstein and others) is still unsolved, and has indeed little data collected as basis for solution.

Seventh question: Is resulting mental fatigue greater when pupils are allowed to remain standing during recitation than when allowed to remain sitting? In general the answer is, "Pupils show all the evidences of great mental fatigue if compelled to stand during entire recitation, especially if recitation be long. With small pupils this is not so noticeable especially when the lesson is short."

Eighth question: What fatigue symptoms follow from working in a room at too high a temperature? The following are noted: "Headache, disinclination to work, restlessness, dullness, confusion of ideas, dizziness, lack of enterprise, noise, all symptoms of general fatigue, headache, etc. Delicate children are very sensitive in this respect." Great unanimity prevails in answering this question. 94 out of 95 answering all fatigue symptoms.

Ninth question: After working in a room where you

have grown to be unconscious of distracting noises are you really more fatigued than if the noises do not occur?

One teacher says: "I am much more fatigued when working with noisy surroundings than when under quiet conditions, though able easily to become absorbed in work and unconscious of noise. There is a sub-conscious fatigue."

Will power and sense power are opposed causing fatigue. Some become accustomed to noise and are disturbed when it ceases. To this question 51 answer yes; 44 no.

In reply to the question, In your past teaching would it have been better if you had sat down more? 38 answer yes; 57 answer no; some say, "Yes, during my first year."

Tenth question: In reply to the question, Did you injure your health by over fatigue when attending school? 44 answer yes; 44 answer no.

Of the 44 who answer yes, 20 give examinations as the chief cause, and 12 give homework. The other causes assigned are closely related to these *e. g.*, over study, long hours, etc. One student says, "I had six hours homework every night."

To the question, At what age was this overwork? 1 answers 10 years; 1, 11 years; 1, 12 years; 1, 13 years; 1, 14 years; 2, 15 years; 6, 16 years; 8, 17 years; 4, 18 years; 3, 19 years; 4, 20 years; 4, 21 years; 2, 22 years. The remaining six did not answer definitely.

To the question, How long did these fatigue results remain? a large number answer about three months, 5 answer 1 year, 5 answer 2 years, 17 say not yet entirely recovered.

Eleventh question: To the question, Have you had experience in remaining in school during noon intermission taking cold lunch and assuming responsibility for order? 41 teachers answered yes; to the question, What per cent. of your teaching power during the afternoon was lost as the result of this detention? 11 answered more than 25 per cent., 16 answered 25 per cent., 7 answered 20 per cent., 7 less than 20 per cent.

To the question, When pupils have been retained from 12 to 1 after a full forenoon of work from 9 o'clock what percentage of an active hour's work was done? the general reply is that in the hour pupils did less than half an hour's work.

A few points may be noted by way of summary.

First. All exercise physical or psychical when kept within the limits of normal fatigue is healthful and such exercise is necessary for the growth and development of body and mind.

Chaplain Searles, formerly of Auburn state prison, says "the prime cause of crime is idleness." Satan always finds mischief for idle hands and it must forever be true that "the rest of the laboring man is sweet," if it be normal rest. There is such a thing as a wholesome, healthful, happyfying normal tire of mind and of body, and it is the teacher's duty to feel its thrill from time to time and to see that pupils are not deprived of a similar pleasure.

There are, no doubt, many people in school and out of it who are suffering from a chronic attack of a very old-fashioned disease called laziness. Such persons will find much food for honest thought and improvement in an investigation of the advantages of normal fatigue.

Second. Exercise carried beyond the fatigue point interferes with growth, is detrimental to the health of body and mind, and attacks the most sacred citadel of the personality, the moral power to resist temptation. "Tire and tire and at it again" when persevered in may shatter every prospect for this life and perhaps for the life to come.

Signs are not wanting to show that this great law is being ignored. The asylums are being overcrowded. How many there are whose hearts are beating too rapidly who are working at high pressure and burning the candle at both ends!

The competition in all walks of life, the worse than slave-driving power of the monopolist, the demands of

society and fashion are hourly consigning their victims to lives of misery. The disease of neurasthenia has evidently come to stay.

With smaller classes, shorter hours and improved hygienic conditions, the results in schools are more satisfactory than they were, and in many cases school authorities are to be congratulated upon what has been accomplished. But there is still need of watchfulness and improvement, even in the best. The fact that 19 teachers out of 50 say that in three years' experience they believe they have injured their health is suggestive. How short the teacher's life in the school room is! How often a student fresh from the normal school (holding a certificate of highest grade), enthusiastic, brilliant, full of life and vigor, takes charge of a large city class, teaches conscientiously and in two or three years becomes so transformed that one can scarcely recognize in the frail worn-out woman of middle age the bright sparkling girl of three years before. This is a species of slow suicide and it is too common in our schools.

And, what about the children? Galton and others have found that most teachers think they have few, if any, cases of over-fatigue in their classes. I find, however, that to the question, Did you suffer from over-fatigue yourself when attending school? 50 per cent. of the teachers answer yes! The ages given are worthy of note. Of 38 who answer yes there are only five who place the age of injury at under 14 years; eight place the age at 17. The time when the most mischief is done seems to be when students are preparing for their departmental certificate examinations. These examinations are usually taken a short time after the period of adolescence, when the vital forces are at low ebb.

Dr. Burnham says "an investigation of the subject of fatigue must do something to melt down the Moloch of examination." It will also do something to emphasize the dangers of excessive homework. The student who reports "six hours homework" also reports "not yet recovered from the effects." In collegiate work it is very easy for one specialist master to assign homework in his subjects sufficient for the entire night. It is well for the teacher occasionally to wrestle with the question, What does it profit a student if he pass an examination and lose his health? The proper solution is not to discard examinations, which are necessary, nor homework, which is healthful, but to adopt the Aristotelian mean between "no work at all" and "over-work causing excessive fatigue."

The number of hours and distribution of subjects in the school day is too wide a subject for the limits of this paper. The data are still insufficient, but all the conclusions arrived at seem rather to tend to the opinion that the hours should be shorter. For example, Birkenstein concludes that, in the seventh year, children should have 11 hours sleep and 3 hours school work. Fifty-nine teachers out of 94 express the opinion that schools opening at 9.00 and closing at 4.00 will do more work with one hour and a half noon intermission than with one hour.

Seventh. The effects of overwork upon the moral sense are very great. Dr. Baker, of St. Paul's, says, "A tired congregation means an empty contribution box." It would be interesting to know to what extent the decline in church attendance by the "lapsed masses" is due to increased pressure of work and whether a half holiday on Saturday afternoon would not improve church attendance.

Children who are allowed to run the streets at night quickly run to ruin, partly because they are fatigued after the experiences of the day and so fall an easy prey to temptation.

Eighth. There are certain well established remedies for fatigue. The most effective is sleep. It is doubtful whether one suffering from exhaustion can have too much sleep. Nutrition must also be looked after. There must be just as much nutrition as digestion will stand. Nitrogenous foods are probably not the best in such cases. Some one has said we shall be remembered as a generation of potato eaters with weak nerves.

Energy must be carefully husbanded and not wasted by undue demonstration.

Every true teacher teaches in such a way as to feel energy go out of him, but he does not teach *every* lesson in this way and he must be content to hasten slowly betimes. We sometimes teach so rapidly and assist so much that children have not time for individual investigation.

The close relation between physical and mental tire must be kept in view. To quote the words of Paul Pry "much walking soon tires and all things grow worse."

The teacher should sit down at times and it would not be out of place in every training school to study how to teach so as to husband energy.

I remember a teacher who examined papers until midnight and came to school so nervous and irritable that he was unfit for work. This had gone on for some time and at length he took the pupils into his confidence and asked them whether they would rather examine their own papers under his supervision and have him vigorous and good-natured or continue as in the past. The pupils examined their own papers after that.

The element of repose should be cultivated. We all avoid intense people. "He makes me tired" is a slang phrase applied to one whose cadence is too fast or too slow for our nervous system. Let us endeavor to conform to the old motto "when most impressed be most possessed."

We must avoid over-fatigue getting completely fagged out. There must be rest and relaxation.

There must also be outdoor exercise away from school environment. It is found that in resting a muscle, occasional stimulus hastens relaxation. The unanimous verdict that remaining at school during noon hour under the strain of responsibility lessens working power at least 25 per cent. during the afternoon is worthy of consideration from the economic as well as from the educational standpoint.

Many teachers have found that difficult cases of discipline have become easy after a brisk walk of half an hour in the open air. A noisy, restless class becomes studious and quiet after a lively recess.

Dr. Arnold was not far astray when he said, "I shall stop teaching school when I get too old to go upstairs three steps at a time."

Normal School, Ottawa, Ont.

Corporal Punishment in the School.

By HELEN M. BULLIS.

It may seem to some that a new article upon so old a topic lacks reason for being. This would be true if corporal punishment were entirely obsolete, or, on the other hand, were proved by experience to be the best of all possible systems. But neither is the case. Every teacher of experience knows that such punishment is still widespread, and most look upon it as a more or less necessary evil.

A highly considered primary principal told me recently that her own method of discipline in a city school in New York state was to compel the pupil to lie face downward across a chair and then "paddle" him with a broad ruler. I have myself taught in schools where the ferule was almost daily splintered—I do not use a figure of speech—upon refractory children, and worse than that, where the system had continued so long that the pupils could understand no other.

Yet the teachers who employ these methods are often graduates from normal schools, and acknowledge Froebel and Pestalozzi as their professional masters and guides. The trouble is, their heredity is too strong for them. The educational theories of the last half century are in their minds, but have not had time to get worked into their bone and tissue. They still practically regard the child from the standpoint of the time when men believed that knowledge of the world, of life, of books, could be forced upon the pupil as warm milk is poured down the throat of a motherless lamb. The struggles of the victim only inspired the foster parent with fresh ardor; the veering head was held more

firmly, the occasional choking splutter treated as the result, not of over-administration, but of wilful stubbornness on the part of the animal. All that is changed now. We agree that development in any direction is only possible from within; that any other theory of education is as illogical as to expect a tree to produce its outer circumference first, and grow from its bark inward. But practice follows theory, alas! a long way off. This half of the century is the meeting place between the old and the new. We are so many Balboas upon our newly discovered ocean of truth, but we forget that our boats are the old unseaworthy ones of tradition and out-worn experience.

There are not lacking hard-headed philosophers who claim with Dr. Parkhurst that "whipping is healthy if soundly as well as affectionately administered," and who base their argument on the authority of Scripture. But we must remember that as His sun shines alike on the evil and the good, so Scripture is a rock upon which all men may build to please themselves, and that very unstable structures often totter above very stable foundation stones.

These particular architects in question may be right as far as exceptionally strong or weak natures are concerned. But to the vast majority, those with strength enough to recognize, unconsciously to themselves, their own individuality and its rights, together with the weakness which cannot look beyond the present certain ignominy to the possible future gain, whipping in school is an unmixed evil. For one thing it eliminates the element of reason from any question in dispute. To say that children are imitative, is to say what every one believes theoretically and sadly, few practically. It is the natural instinct of the child to match force with force. If his supply of this gives out, or it be not expedient to use it, cunning comes unsought to his assistance.

We would most of us be surprised if we could see for an instant the *real thoughts* in the mind of a recently whipped child; behind the tear-stained, quivering face, and the broken, penitent words, behold the tumult of shame, anger, revenge, in which the real cause of the trouble is entirely submerged, the chaos of half-formed plans, wild, flying schemes, shadows of ideas, that pass indeed, but forever leave their mark on the child's soul. Children never tell these things; they are themselves hardly conscious of them, but they *are*, and are for the worse, and not for the better.

Another result of whipping, still more deplorable, since it acts and reacts, endlessly, between matter and spirit, is its lessening of the pupil's feeling for the sacredness of the body. I think statistics will support the assertion that those mis-usages of the physical which are so much more common beneath the every-day life of childhood than most people care to think, abound especially in schools where corporal punishment has long been of frequent occurrence.

Some teachers forget the wide difference between respect for authority and fear of it. The one is voluntary and to be cultivated; the other is involuntary, and a survival from a lower state of civilization. Fear of authority is destructive to respect for it. The child who is reduced to outward obedience by superior bodily force, recognizes instinctively that though mind is compelled to act *through* matter, it does not act *upon* it; and instead of opening the avenues of his own mind to suggestion, he closes them, and his intellectual growth is by so much stunted. Lastly, it is curious to reflect that while we have outgrown all forms of public punishment for adults, have declared that the whipping-post degrades even the criminal and brutalizes the community, we still allow children, whose minds are far more easily and permanently impressed, to view scenes of punishment from which we would shrink, were they not reduced proportionate to a smaller world than ours.

Grown-up egotism has much to answer for at the hands of children, and not the least charge against it is that they have not been protected at the most critical period of life from experience against which society guards its own maturity

Summit, N. J.

Nature Study.

Distribution of Sunshine.

By WILBUR S. JACKMAN.

A correct idea of sunshine distribution is fundamentally important in the study of mathematical geography. There are several things in the experience of young pupils, and indeed in that of grown people, which make the acquirement of the true picture somewhat difficult. It is rarely considered by teachers, that even young children when they enter school have a picture—their own picture—of the earth. This has slowly but surely grown in those early but intensely active years preceding formal school instruction. It would seem to be unfortunate that the child's early notions of the earth and the sun and their relations to each other should be like those of early peoples, before the days of the telescope, entirely wrong. The child's pictures of a great flat, and perfectly motionless earth and of the sun, a relatively small burnished disk, daily traversing the sky, just out of reach of the birds, have all been so honestly earned that it seems almost wrong to undeceive him. As the subject is usually presented in the common

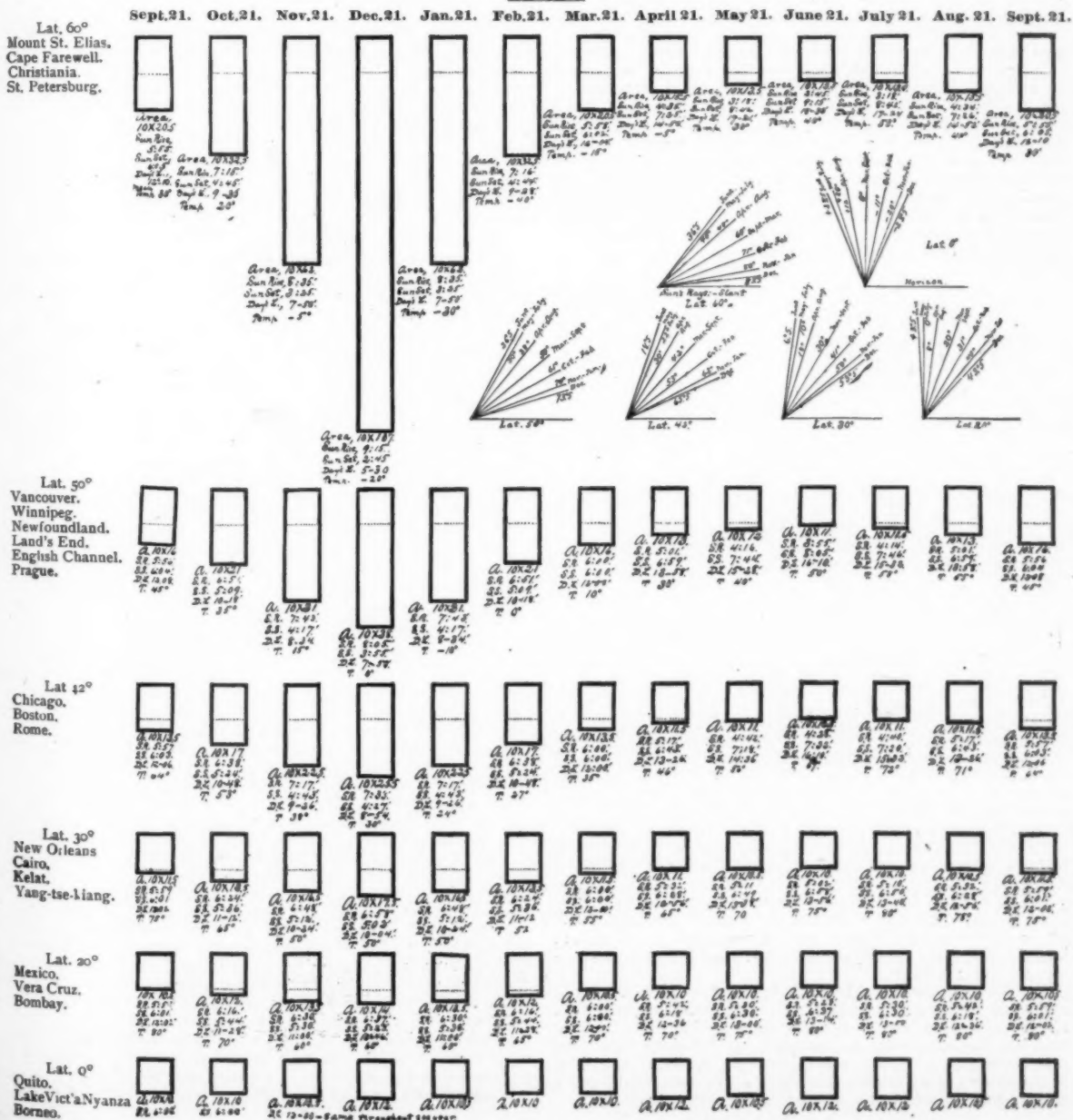
schools, there is no excuse for the attempt that is made to disturb his early impressions. The teacher's first act is to smite him with the statement that the earth is round; then, in exchange for the pupil's earth—with all its flatness, still a world of bewildering beauty and intense interest—the teacher presents him with a six-inch paste board globe and bids him think on that. It is a barter which the soul of the pupil never sanctions and the result is that although he ever after dutifully says, "The earth is round like a globe or ball," the picture of the dear old flat earth of his childhood forever remains as the actual basis of all his geographic thinking.

The fact is, the pupil will never exchange his flat earth of actual experience for the pasteboard globe of the teacher's desk; nay, he will not trade it for the round earth itself until, through an equally actual experience the latter gradually fills up as a great picture and lays hold of his imagination and his life as did the one of his early years. Whatever may be in the child's experience when he enters school, whether right or wrong, the teacher may rest assured that usually it has been acquired through honest growth; if education is to correct or expand this experience, it can be done only through processes of growth just as gradual and equally genuine.

It is, therefore, a serious task for him who seeks to disrupt the child's experience by teaching him that the earth is round; that it is flying through space nearly nineteen miles every second;

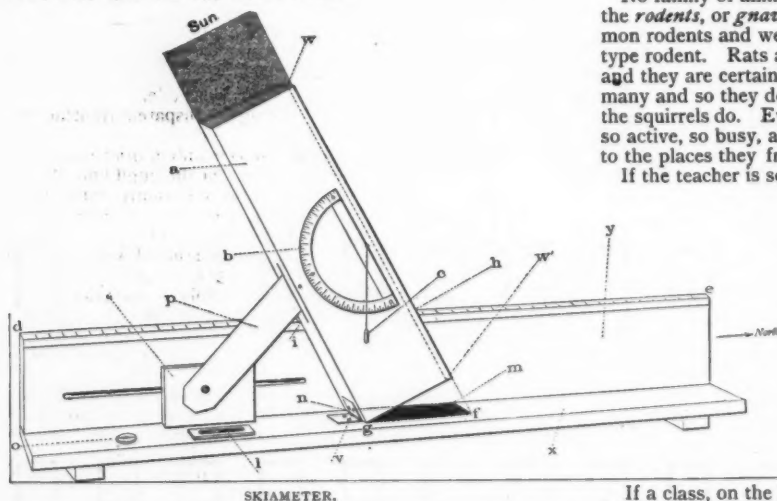
CHART—Showing distribution of sunshine, times of sun-rise and sun-set, day's length, and slant of sun's rays on the given parallel, and also the mean temperature (approximate) on the meridian of Chicago, for each month.

PREPARED BY WILBUR S. JACKMAN.



that it spins like a top with an incomprehensible speed; that, contrary to all his experience with whirling bodies, loose objects all over the earth's surface, men included, do not fly out into space, but cling closely to it; that, contrary to all his notions of up and down and out, there are people whose heads point out (down he thinks) in an exactly opposite direction to that of his own; that others stand with the axial line of their bodies making a right angle to that of his own, and that in all the intermediate positions all possible angles with his vertical axis are formed by the bodily axes of the people who inhabit the globe; that contrary to his most elementary experience with a cup of water which always spills when inverted, the great ocean cups are constantly turned over and over yet spill never a drop. These and a host of other facts which actually subvert his whole experience by some means must be made to appear *more reasonable* than the very things which he has seen before his own eyes all his life.

By some rational use of his experience, his picture of the sun must be expanded out of its insignificance until its hugeness exceeds, by many thousand times, the size of the earth, and it must be thrust out into the fathomless abysses of space many millions of miles. He will then picture the entire volume of sunshine that strikes the earth as the frustum of a cone with hollowed ends, the smaller end covering a little more than a hemisphere of the earth and the larger a little less than a hemisphere of the sun. This will reverse the picture gained by the pupil's own observation and also the one gotten from most pictures of the two bodies as shown in books. Within the entire volume of sunshine which reaches the earth, a cylinder may be pictured which has a diameter equal to the diameter of the earth and whose length is the shortest distance between the two bodies. This cylinder of light and heat may be supposed to contain nothing but parallel rays of sunshine. It will be seen that the axial ray would, if continued, pass through the center of the earth—a *vertical ray*. All other rays in the cylinder, though parallel to the axial ray, would not pass through the earth's center; that is, they are *slanting rays*,—the slant being due to the *earth's curvature*. Moreover, it will be seen that the slant varies from 0° at the vertical ray to 90° at the tangent rays which lie in the surface of the cylinder. From this it is apparent that any definite volume of sunshine of a given sectional area will have a varying intensity per unit of area depending upon the degree of slant. Since the slant varies with the seasons for all places upon the earth, it follows that the same volume of sunshine will have a correspondingly variable heat and light value upon a given unit of surface.



The instrument illustrated in the accompanying cut has been devised as an easy means of measuring the distribution of a given beam of sunshine at any slant. This is accomplished by measuring the area of the *shadow* cast by the cross section of the stick *a*, when the latter has the same slant as the sun's rays. For this reason, the name *skiameter* (Greek *skia*, shadow, and *metron*, measure) is suggested. Almost any one can make the apparatus, and the mode of using it will be understood from the following explanation.

A, beam of wood 10 units (centimeters suggested) square and about 30 cm. long; *b*, brass protractor; *c*, plumb line; *d*, meter stick; *e*, bottom board 10 cm. wide; *f*, side board 10 cm. high; *g*, copper or tin strip for adjusting (*a*); *h*, block of wood; *i*, compass; *j*, level; *k*, hinge.

To take observation: Place the skiameter at *noon* on *north* and *south* line on a *level* surface, *a* pointing south; adjust *q* until shadow of edges *w* and *w'* coincide on *x* in line *fm*; beam *a* then has the same slant as the sun's rays; *fmg* equals the area covered by a beam of sunlight having the same slant and sectional area as *a*; measure the edge *fg* by reading distance *h* i on *d*; find degree of slant of *a* by means of the plumb line *c*.

At the *equinox*, the angle formed by the sun's rays, with the vertical at *noon*, corresponds to the angular distance of the observer from the equator, *i. e.*,—with his latitude. If his latitude is 35° , the noon slant of the rays at the equinox will be 35° . To find the noon slant of the sun's rays at *any point north of the equator at any time*: (1) When the sun is *south* of the equator, *add to the latitude of the given place* the number representing the difference between the latitude and the noon slant of the rays at this time and place. (2) If the sun is *north* of the equator, *subtract* this number from the latitude. Example.—Latitude of observer is 40° , noon slant of rays is 55° ; difference is 15° , which added to the latitude of any place north of the equator will give the noon slant of the sun's rays.

By means of the skiameter, it is easy to construct diagrams, similar to those in the accompanying chart, which will show the relative intensity of a given beam of sunshine upon an assumed unit of surface, at any place on the earth at any time during the year. The declination of the sun on any date, *i. e.*,—its distance north or south of the equator may be found in the *Nautical Almanac*, published by the government at Washington.

By the careful study of such a chart, the teacher will find that many interesting and useful comparisons may be made. Thus, on the shortest day of the year, a given beam 10 units square, or 100 square units, will cover 120 such units at the equator, say Quito, 140 at Vera Cruz, 175 at New Orleans, 255 at Chicago, 380 at Winnipeg, and 1070 at St. Petersburg. The *intensity* will be inversely proportional to the areas.

On the longest day of the year, at Quito, the area will again be 120 units, at Vera Cruz 100, at New Orleans, the nearest fraction more, at Chicago 105, at Winnipeg 110, at St. Petersburg 125. It will be readily understood how the latter place with its long day of 18½ hours and an intensity nearly equal to that of our own latitude in August, may have some exceedingly warm weather in summer time. It will be interesting to note throughout the year the relation of temperature to distribution of sunshine as modified by length of day and by physical causes.

Cook Co. Normal School.

The Squirrel Family.

By FRANK O. PAYNE.

No family of animals is more interesting for observation than the *rodents*, or *gnawers*. The squirrel is one of the most common rodents and we take him as a subject for study, as a sort of type rodent. Rats and mice are perhaps a little more common, and they are certainly more easily got but they are repulsive to many and so they do not furnish so good a theme for study as the squirrels do. Everybody loves squirrels. They are so pretty, so active, so busy, and they lend such an atmosphere of liveliness to the places they frequent.

If the teacher is so fortunate as to be at work in the country or in a small village school, her pupils may go out into the woods and study the squirrel in his native haunts. If a class can do so, it is well to select some place where squirrels are found, and sit down upon the ground. Let there be no running around, no boisterous talking. Remain quietly on the lookout. One will not have to remain long before a squirrel will be discovered. If nothing is done to frighten him he will move about here and there apparently unconscious of being watched. The woods often seem to be deserted by small animals, but it is surprising how many living creatures are to be found by him who seeks them.

If a class, on the lookout succeeds in discovering "bunny" at home, the following points should be observed about him: His size, shape, and colors; his alertness to noises; his rapidity of motion; his nervousness amounting to timidity. Note also what he is doing, where he is going, whence he comes. See if there is anything like system in the actions of the squirrel.

Some one has recounted that in watching a squirrel once in the (all, he was observed, (1) to come stealthily from his hiding place; (2) to run a short distance to a small tree; (3) run up this tree perhaps four or five feet; (4) make a rapid series of observations in every direction; (5) come down from this "observatory"; (6) frisk along to the nut tree; (7) pick up a nut; (8) hasten back to the tree midway which he again ascended to see that all was right; (9) descend the tree and run rapidly to his nest again; (10) enter his hole after first making a hasty observation that he was not discovered; (11) reappear again in less time than it takes to tell it and repeat the same eleven acts in precisely the same order.

Observations of animals will not always show such perfect system, but they often will. The observations mentioned above were made from a window and were made in the autumn when the squirrel alluded to was hiding his winter store of nuts.

Small animals are always in a state of terror lest they be taken

by larger enemies in the woods. This is probably what made the squirrel above, ascend the tree midway. An excellent lesson can be drawn by asking pupils to try to imagine themselves to be squirrels and feel as squirrels must feel all the time on the alert to avoid being *robbed* and *killed* by their enemies.

Having studied the animal in this manner from a distance, a closer observation is necessary. The best way to study the squirrel closely, is to procure a live specimen from some one who possesses such a pet. The cage can be taken into the school-room and the squirrel can live here for several days, sleeping, eating, and performing all the acts of life in the presence of the children. If a stuffed specimen can also be procured, the children may be allowed to handle it so as to see how soft the fur is. It is sure death to the living animal to permit it to be handled by children be it ever so fondly. Questions and conversation like the following may be employed to call attention to the various parts and peculiarities of the squirrel.

I. The Head. Call attention to the squirrel's head. Guess its length and breadth. Measure its length and breadth. Compare the size of the head with the size of the whole body. The children will discover that the head is not far from one-fourth the size of the body. What is the form of the head? (egg shaped or ovoid.) Where is the head widest? Notice that there is a depression below the eyes. The lower part of the face is pointed. Compare the squirrel's head with the heads of other animals. What sort of covering has the head? Is this fur like that on the body? On the tail? Feel of the fur on different parts of the squirrel and compare it. Where is the head darkest? Where lightest? Notice how it shades from one color to the other. Sketch the head in different positions, front, side, back, top. Observe the ears, their position upon the head, their shape and size. Observe the large lustrous eyes, their position, color, and expression. Observe the "whiskers" and ask questions to bring out their use. Examine the teeth especially the front pairs of gnawing teeth. The best way to study squirrel's teeth is to get a head, boil and scrape off all flesh. Soak in soap suds to remove fat. Dig out the brain through the *foramen magnum*. From a skull, not only the shape, size, color, and structure can be seen but the peculiar long roots running away backward and upward into the sides of the jaws.

Figures 4 and 5 of the chart will show this better than words can describe it.

The sutures between the bones of the skull should also be observed.

The following facts should be made prominent in regard to the teeth.

The teeth are fitted for gnawing.

The enamel is on the front only.

The teeth grow from below as fast as they wear off at the tops.

The enamel is yellow orange.

There is a wide space between the front and the side teeth.

The teeth are curved into a half-circle.

The teeth grow as our nails grow.

Nut gnawing keeps the teeth short and sharp.

II. The body. Since the principal part is the head, there need be very little said about the body. Its shape and suppleness fit it for rapid motion and for entering into small places such as holes in stone walls. The fine inner fur and the coarser long hairs among it should not escape the notice of the children.

III. The legs. These need a passing notice. They are slender and therefore well fitted for rapidly running over the ground. But the toes are worth more careful study. Any one who has watched squirrels scamper up a tree or run along with wonderful rapidity on rough fences without ever once falling off, must be curious to see how the feet are made to perform such prodigies of running. This is easily understood when one sees the sharp little claws with which a squirrel can hold on to whatever he stands on.

IV. The tail. Attention should be directed to the length, breadth, and position of the tail. Examine the fur of the tail as compared with that of the remainder of the body. Of what special use to the squirrel is his tail? It is generally conceded that the squirrel uses his tail as an additional covering during his period of hibernation. But any one who observes the way in which a squirrel carries his tail when running along a fence, can not fail to notice that he uses it for balancing himself also.

V. Manner of eating. How does the squirrel pick up his food (prehension)? Describe how he holds it while gnawing. Notice his position while at this work. Of what use is his tail to him at such times?

Figures 1 and 2 show two squirrels in a natural attitude upon the branch of a tree. No. 1, is eating of some soft thing, a twig perhaps. No. 2 has a nut which he is about to gnaw. See how he grasps it between his paws.

The squirrel's cousins. The rodents are so common and so numerous that every child is familiar with them. No part of the world is without its rodents. The country abounds in field mice, rats, muskrats, woodchucks, gophers, chipmunks, kangaroo mice, squirrels (black, gray, red), rabbits, jack-rabbits, prairie dogs, and many other rodents. The city is not without its population of rats and mice while white mice may be bought for a small sum at bird stores. Figure 3 is the striped gopher, so common in

Minnesota as to have made people call that the Gopher State and young Minnesotans are often known as "Gophers," just as Ohio boys and girls are called "Buckeyes."

If squirrels are not available, select any rodent and study it as above. Institute comparisons with other rodents. Require a good deal of written work on the animal studied and let this written work be based upon the *pupil's own observation*, not upon what you tell him, nor upon what other pupils see and tell him, nor upon what can be gleaned from books. Supplement the lesson by reading and use the chart for reference.

The above lesson upon rodents is suggestive of similar lessons upon other great families of animals. The carnivora or flesh eaters as studied from cats, dogs, weasels, etc., might be of equal interest. Such work is laying a foundation deep and strong upon which to build in later years.

With the Minerals.

By TERESA GLASHEEN.

(This article is given in this issue so that teachers looking forward to the work it suggests for next winter may collect a part of their material, look up their reference books and plan such amplifications or condensations of the work as they intend to adopt during the vacation months.)

"Nature never yet betrayed the heart that loved her."

Before the snow comes, it is well to make a collect on of minerals common to our neighborhood in addition to those supplied us for special study. In our note-books last year, which were a source of pride and pleasure to the pupils, we arranged our work neatly after each specimen had been studied. One page was arranged thus:

SCALE OF HARDNESS.

1. Chalk, Graphite. 2. Rock-salt, Mica. 3. Calcite. 4. Fluorite. 5. Glass. 6. Feldspar. 7. Quartz.

All these minerals were examined and carefully tested as to hardness, and others studied were compared with these. Small squares of glass—common window glass—were supplied to the pupils. They knew 5 represented the hardness of glass, and could easily determine if the mineral they were studying, seemed harder or softer than that.

The glass is also used in scratching the stones—another means of deciding their place in the scale.

Quartz, which is so common as to be easily obtainable, is 7 and few or none of the common minerals are harder. On another page in the note-books we wrote carefully many of the names we should need in our descriptions, learned their meaning and how to spell them. For instance:

Color: grayish-white, reddish-brown, etc.

Streak: color of powder.

Luster: metallic, glassy, dull, silky.

Structure: granular, compact, scaly, cleavable.

Other Properties: flexible, brittle, tough, transparent, translucent.

Where found—Use—Name.

This list may be enlarged upon—indeed only a brief summary of our list is given here. It is essential that the pupil know these words and how to spell them as he will be constantly using them in mineralogy. If they are in his book he can refer to them at any time and thus be independent of the teacher's aid.

Each exercise was dated and the stone studied was analyzed much in the same way as the plants had been, earlier.

One of our commonest minerals—certainly in the vicinity of Boston, is Roxbury pudding stone or conglomerate.

It is sometimes called the plum-pudding stone. It is made up of small pebbles mixed with clay or sand by either volcanic heat or pressure from other causes.

We had read a "recipe" for making the pudding so we tried it. Into a bread pan we placed fine sand, a little cement, and some plaster of Paris. The boys had brought some rounded beach pebbles which we thrust into our mixture after stirring it all in water. It was then left to harden and the result was a fine dish of pudding-stone!

Oliver Wendell Holmes has written a poem about this stone, which children always like to hear:

"They flung it over Roxbury hills,
They flung it over the plain,
And all over Milton and Dorchester too
Great lumps of pudding the giants threw,
They tumbled as thick as rain."

Common granite is made up of quartz, feldspar, and mica. Quartz is one of the minerals most commonly met, and one of the most interesting. It is encountered in a variety of forms and you can scarcely fail to find many illustrations of it. Pupils will find, on investigation, that it will scratch glass and is 7 in the scale of hardness. The structure is compact.

White or milky quartz is perhaps the most abundant, but we find in various places quartz crystals, amethystine crystals, rose quartz, agates, and flint. Then some pupils will have *arctostylites* in rings or agate marbles—all varieties of quartz—so a variety may be examined. Ask them to look for specimens to swell your supply.

Feldspar, another ingredient of granite, is likewise very common, and one is likely to find it in his walks anywhere.

A favorite device is to test its hardness with a pocket knife—

the feldspar not yielding in the least, thus establishing its claim to be 6 in the scale, because quartz is a little harder. The satiny luster and cream white color of this stone give it a pretty appearance and we decide it is entitled to a place in our cabinet. A moonstone can always be obtained from some one and pupils will like to know it is a form of feldspar. In a decomposed state, feldspar is used in making flower-pots, vases, porcelain, and various kinds of wares.

Mica is so abundant as to be very easily obtained for a lesson. There are three kinds; the white (muscovite) the black (biotite) and the brown (phlogopite). Any one of these may be used. It will be found to be quite soft, about 2 in the scale and its cleavage is quite marked.

It is transparent and translucent. It is found as a part of many stones. It is used in stove doors, for frost work on cards and various other uses have been found for it. These three minerals make up granite—one of our most useful stones, especially in building purposes, and for monuments, curbstones, and paving. Much granite comes from Quincy. There is a Scotch granite which when polished is very handsome and ornamental.

A very interesting lesson may be had with gypsum. If some is crushed and placed in a test-tube heated over an alcohol lamp, water will be seen to collect on the sides. The powder is plaster of Paris. Let pupils draw in their note books the lamp and test tube in position and afterward write the results of the experiment. Many pupils will know that plaster of Paris is used in mending lamps and other household articles, besides being made into vases, busts, stucco work, and molding, and sometimes is used as a land fertilizer. Mix some crushed gypsum with water and let it stand. It will be found to harden soon. Satin-spar is a form of gypsum and is very dainty and pretty.

It is well to distinguish between metals and non-metals. Every metal is a mineral, but not all minerals are metals. Quartz, feldspar, glass, and common stones are minerals or non-metals; while metals may be illustrated by lead, tin, and gold. Teach ductility or the quality of being drawn out—like gold wire, and malleability or the quality of being hammered out very fine like gold.

Lead, tin, and zinc may be taken at one lesson. Tin is not found in the earth in a metallic state, but is obtained from an ore. Pupils who have studied their geography diligently will remember that tin is found in abundance in Cornwall, England, and at Banca, one of the Malaysian islands. When tin is bent it gives a peculiar "crying" sound. Most of the tin dishes used are iron coated over with tin. The rust is the iron rust coming through the tin. Besides being utilized for various kinds of kitchen utensils, tin is used for roofing.

Lead contains some sulphur. It makes a peculiar sound when it falls. Compare it with the sound of tin. It is used for pipes because it is easily worked, but perhaps some pupils can tell a danger in using it for water pipes.

It is used also in paint. Zinc is of a bluish-white color and breaks easily. It is a little harder than lead. "At a red heat it takes fire and blazes fiercely, producing light, white flakes of oxide of zinc, which is used as paint, under the name of zinc-white. Zinc is used for refrigerators, to put under stoves, and in electric batteries. Ask pupils how the zinc in batteries is affected. Mixed with copper, zinc makes brass. Gold and silver can easily be taken in one lesson, and here the pupils can bring their own specimens, as money (coins), gold rings, pins, bracelets, and the like. Let pupils locate the chief gold and silver mines in the world, perhaps aided by their geographies. Ask them to find out how knives, forks, and spoons are plated with silver. The latter alloyed with copper makes our coins, as well as various articles of jewelry.

There is much to be observed concerning gold and much that pupils can see for themselves—that it is soft, malleable, compact, and has a yellow streak. A sketch of its discovery in California may not be amiss and a talk on the "Forty-niners."

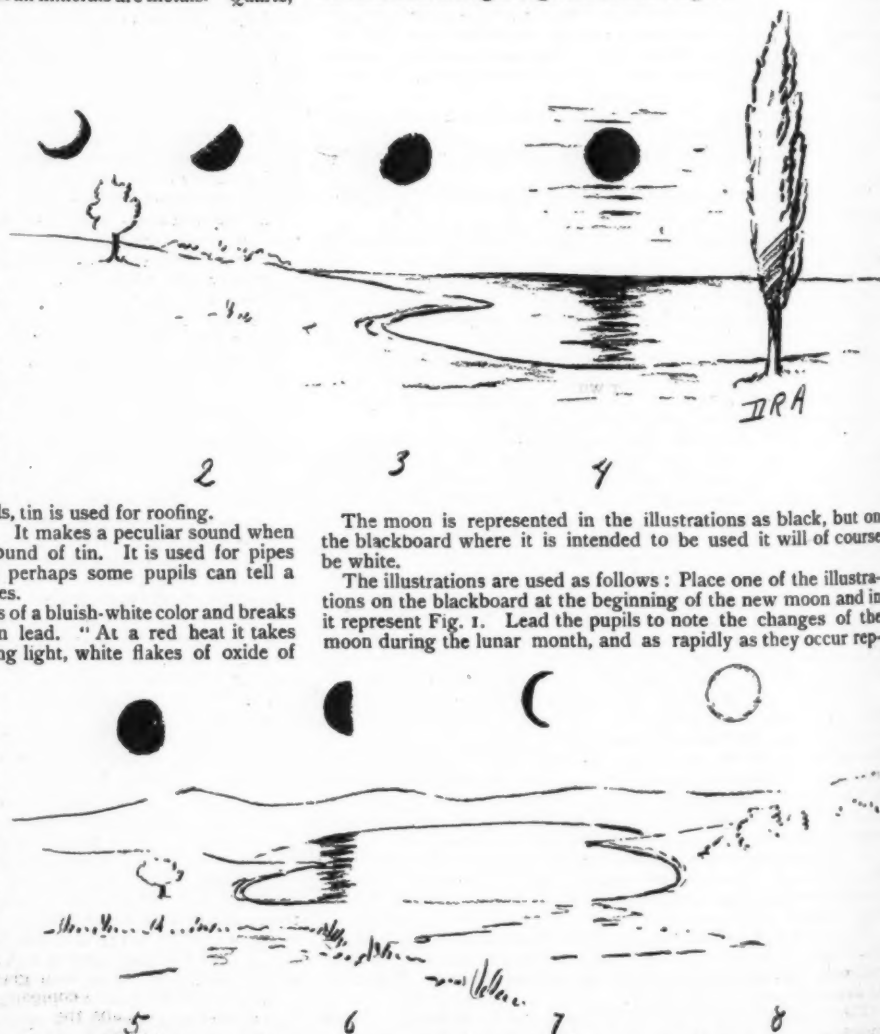
Goethe says, "Nature knows no pause in progress and development, and attaches her curse on all inaction." May not these words apply most forcibly to the field of mineralogy? The stones about us are constantly changing, the soils likewise, and what a diversification there is. In many places are rocks with glacial markings. Let pupils observe these, if you are so fortunate as to have such rocks near by, and a lesson on glaciers may be given, showing the effect of them upon stones and how so many have been moved from their original abiding places by these glaciers, huge masses of frozen snow and ice moving by their own weight and relentlessly carrying forward in their progress quantities of rocks. And so to-day we find scattered far and wide stones, which, previous to the glaciers, were in entirely different places. Many of our rocks are rounded and smoothed by the grinding they received from the glaciers. There is so much we may see with our own eyes without the aid of books, if we will but, "Come forth into the light of things; let Nature be your teacher," remembering that "Eyes are not so common as people think, else poets would be plentier."

The Moon's Phases.

By D. R. AUGSBURG.

The two illustrations, Figs. 1-8, represent the different phases of the moon, beginning with No. 1, which is usually called the new moon, and representing in succession the first quarter, Fig. 2; full moon, Fig. 4; second quarter, Fig. 6, and new moon, Fig. 8. An intermediate phase between the quarters is also represented in Figs. 1, 3, 5, and 7.

Strictly speaking, Fig. 8 is the new moon, but usually it cannot be seen until the light edge shows as in Fig. 1.



The moon is represented in the illustrations as black, but on the blackboard where it is intended to be used it will of course be white.

The illustrations are used as follows: Place one of the illustrations on the blackboard at the beginning of the new moon and in it represent Fig. 1. Lead the pupils to note the changes of the moon during the lunar month, and as rapidly as they occur represent them in the drawing. For example begin by representing the new moon as Fig. 1. When the first quarter is reached substitute Fig. 2 in the place of Fig. 1, and so on through all the phases.

[The phases of the moon should be presented on the blackboard in connection with the work in meteorology.—Ed.]

Language.

Articulation.

The *Voice* gives the following good exercises for articulation:

"Amidst the mists and coldest frosts,
With barest wrists and stoutest boasts,
He thrusts his fists against the posts,
And still insists he sees the ghosts."

"Of all the saws I ever saw, I never saw a saw saw as this saw saws."

"When a twister, a-twisting would twist him a twist,
For twisting a twist, three twists will be twist,
But if one of the twists untwists from the twist,
The twist thus untwisting untwisteth the twist."

"Robert Rowley rolled a round roll round; a round roll Robert Rowley rolled round. Where rolled the round roll Robert Rowley rolled round?"

"Theophilus Thistle, the successful thistle-sifter, in sifting a sieve full of unsifted thistles, thrust three thousand thistles through the thick of his thumb. If, then, Theophilus Thistle, the successful thistle-sifter, in sifting a sieveful of unsifted thistles, thrust three thousand thistles through the thick of his thumb, see that thou, in sifting a sieveful of unsifted thistles thrust not three thousand thistles through the thick of thy thumb."

"I saw Esau kissing Kate;
The fact is, we all three saw;
For I saw Esau, he saw me,
And she saw I saw Esau."

Subjects for Compositions

Write the following quotations on the blackboard and have each pupil select one, write it at the head of his composition paper, and write from two to three pages suggested by it.

"Tell the truth and shame the devil."

Her angel face,
As the great eye of heaven shined bright
And made a sunshine in a shady place.

—Spenser.

Her eyes are homes of silent prayer.—Tennyson.

Blue eyes shimmer with angel glances
Like spring violets over the lea. —Woolson.

Sleep! to the homeless thou art home,
The friendless find in thee a friend. —Elliott.

The patriot's boast, where'er we roam,
His first, best country ever is at home. —Goldsmith.

"Shoot, if you must, this old gray head,
But spare your country's flag," she said. —Whittier.

Sink or swim, live or die, survive or perish,
I give my hand and heart to this vote. —Daniel Webster.

How sleep the brave who sink to rest
By all their country's wishes blest. —Collins.

Of two evils the less is always to be chosen.—a-Kempis.

The stone that is rolling can gather no moss.—Tusser.
At Christmas play and make good cheer
For Christmas comes but once a year. —Tusser.

Who goeth a borrowing
Goeth a sorrowing. —Ibid.

My mind to me a kingdom is. —Dyer.

Slowly and sadly we laid him down
From the field of his fame fresh and gory,
We carved not a line and we raised not a stone,
But we left him alone with his glory. —The Burial of Sir John Moore.

A dwarf sees farther than the giant when he has the giant's shoulders to mount on.—Coleridge.

But pleasures are like poppies spread,
You seize the flower its bloom is shed,
Or, like the snow fall in the river,
A moment white, then melts forever. —Robert Burns.

"Much of love and sunshine comes into the world with little children."

The Tennyson Club.

(Fifty quotations from Tennyson.)

The intention of this exercise is to familiarize a class with Tennyson; an entire class (say 25 pupils) may take part; as there may not be room on the stage some may leave at intervals and new members come in. The conversation is merely a frame work to introduce the quotations and may be changed to suit circumstances. There must be appropriate movement and action. Fifty quotations are employed in this exercise; those who employ them should have them written on cards and give them accurately. It is begun by the entrance of several girls who converse in a free manner; some with and some without hats.

1. I say, girls, I felt sure we would be better off without Amanda, and so I did not tell her of our meeting to-day.

"They call me cruel hearted, but I care not what they say."

2. Well, now, we are here, what is to be done?

"Lead, and I follow." (A knock heard; a girl enters and advancing to one, says:)

3. "Does my old friend remember me?"

I heard of this meeting and determined to be present.

4. You are welcome,

"An open-hearted maiden pure and true."

Let us now proceed; if it pleases you I will call the Club to order. (Taps.) We are ready, now, for the business that has brought us here.

5. We are to discuss literature. On my part, I can say I hope that our reading of the poet-laureate, Alfred Tennyson, has been of service to us, and that we shall quote him freely; I respect him because he is full of reality.

"I am half sick of shadows."

6. An advantage that comes from the study of literature is the knowledge of neat expression; our poet says:

"The past will always win a glory from its being far."

8. All of us can remember what has just been well called a neat combination of words; let us cite them; mine is:

"Full of noble things."

9. Mine is:

"Soiling another will never make oneself clean."

10. Mine is:

"Young as I am, yet would I do my best."

Chairman.—Your selections are all admirable; yet there are deeper notes in Tennyson and

"You, yourselves will smile at your own selves hereafter," when you comprehend his great utterances, as this:

"Oh, yet we trust
That nothing walks with aimless feet;
That not one life shall be destroyed,
Or cast as rubbish to the void
When God hath made the pile complete."

(Turns to one.)

We have not heard your voice yet.

11. "Silence is wisdom, I am silent then." (They clap hands.) (Two now sit on one chair with arms entwined, one says):

12. "And we will live like two birds in one nest." (A knock, several enter, and several leave.)

Chairman.—You are welcome (to one).

"A rosy blonde" (to another).

"Two so full and bright—such eyes."

"A bold heart yours."

"A quick brunette, well molded, falcon-eyed," "Blue eyed and fair in face." You are to join us in our discourse to-day, and show the posies you have culled from Tennyson. Sit, good friends.

13. We thank our chairman,

"Noble among the noble,"

for his welcome words. We shall try to show we have not read our poet all in vain. We cannot crown him, for

"He wears a truer crown
Than any wreath that man can weave him."

14. I would ask you all to note how many things he says, that we have felt, as

"Worse than being fooled
By others is to fool one's self."

Again:

"He makes no friend who never made a foe."

15. Yes, and this:

"Men rise on stepping-stones
Of their dead selves to higher things."

Chairman.—A great truth and often quoted, "God bless you for it, God reward you for it." (A knock and several enter and several depart.)

More of our friends I wish to grace this festal day. (To one):

"Large her violet eyes looked, and her bloom
A rosy dawn kindled in stainless heavens."

(To another):

"She has a lovely face,
God in his mercy lend her grace."

- (To another):
"A damsel of high lineage and a brow
May blossom, and a cheek of apple blossom."
- (To another):
"Fairer than Rachel by the palmy well,
Fairer than Ruth among the fields of corn."
- (To another):
"Bless thee for thy lips are bland
And bright the friendship of thine eye."
- (To another):
"There is no truer-hearted."
- (To another):
"A head
So full of grace and beauty, would that mine
Were half so gracious."
Good friends, join us and make the time a joyful one.
16. Your welcome makes us glad we've come.
"Surely I shall be wiser in a year,"
but I can say our poet opens up to us the deepest thoughts
always in the simplest language, as
"The greater man the greater courtesy."
17. Sometimes a wise wit sparkles in his words:
"Kind like a man was he; like a man, too, would have his way."
18. Yes, and don't we remember this:
"A smile abroad is oft a scowl at home." (They laugh.)
19. Sometimes he has sharp words:
"I have lighted on a fool;
Raw, yet so stale."
20. Note how he hits the young fellows hard.
"Rain, rain, and sun, a rainbow in the sky,
A young man will be wiser by-and-by."
21. What does he mean by this, I'd like to know?
"The fat affectionate smile?" (They laugh.)
22. Probably the same as by this:
"A red
And cipher face of rounded foolishness."
Chairman.—He speaks my mind when he says:
"I wish I were some mighty poetess."
But there are several here with apt quotations yet. (Turns to
one):
"Blest be Heaven
That brought thee here—to warm
My cold heart with a friend."
23. "I seem as nothing in the mighty world," and can only
wonder at the gems you've found. Proceed, dear friends.
(To chairman):
"Money can be repaid,
Not kindness such as yours." (Bows to chairman
who bows in return.)
24. I have looked at Tennyson to see his references to flowers;
here are some:
"Those eyes
Darker than darkest pansies, and that hair
More black than ash-buds in the front of March."
"Bring orchis, bring the foxglove spire,
The little speedwell's darling blue,
Deep tulips dashed with fiery dew,
Laburnums, dropping-wells of fire."
(Hands clapped.)
25. How often he speaks of eyes, why is this?
"Looking wistfully with wide blue eyes. As in a picture."
"Eyes not dropt down nor over bright."
26. Yes, and he says:
"The languid light of your proud eyes
Is wearied of the rolling hours."
27. I think I should like to have eyes which would be com-
pared to "Darkest pansies." He speaks of
"Heart-hiding smile and gray persistent eye."
(A bell strikes.)
Chairman.—Good friends, we are reminded that this happy
hour must close. 'Tis well we meet.
"We rub each other's angles down."
And then we have such lessons from the lines we quote:
"High thought and amiable words
And courtliness and the desire of fame,
And love of truth and all that makes a man."
In parting, let me hope that we shall meet ere long again:
"Tho' my lips may breathe adieu,
I cannot think the thing farewell."
- They have gathered by this time in a semicircle facing the
chairman and also the audience, and bow to her and she to them.
Commencing on the right side the pupil nearest the front now
marches to the door followed by those of the quarter-circle be-
hind her; those in the other quarter-circle follow with music, if
possible; the chairman waits until all have left the stage; steps
forward and says:
"I, the last, go forth companionless." (Bows and passes out.)

Legends of the Stars.

By MARY PROCTOR.

Among the leading circumpolar constellations, are those be-
longing to the royal family, as it is sometimes called, including
Cepheus, Cassiopeia, Andromeda, Perseus, and Cetus. On the
old star maps, Cassiopeia is represented seated on a throne,
placed upon the arctic circle, and holding in her left hand a
branch of a palm tree. She is surrounded by the chief person-
ages of her royal family, namely her husband Cepheus, on her
right hand; Perseus, her son-in-law, on her left; and Andromeda,
her daughter, just above her. The constellation Cetus is the
sea-monster, and is placed within a short distance of Andro-
meda.

According to the old Grecian legends, Cassiopeia was the wife
of Cepheus, king of Ethiopia. She was exceedingly beautiful,
and boasted that she was fairer than Juno, the wife of Jupiter, or
the Nereides—a name given to the sea-nymphs. This so pro-
voked Juno, that she called upon Jupiter to avenge the slight to
her own beauty, and Cassiopeia was changed into the constella-
tion of stars named after her, and was placed in the sky. But
the Nereides had to be appeased, and they complained to their
king, Neptune, about Cassiopeia's vain boast. He sent a
frightful monster out of the ocean to ravage the coast, as a
punishment for her insolence. But this was not sufficient to
avenge the wrongs of the sea-nymphs. They demanded, that
Andromeda the beautiful daughter of Cassiopeia, should be
chained to a rock on the beach, and exposed to the fury of the
sea-monster. Andromeda was accordingly chained to a rock
and the monster rushed towards her, but just as he was about
to devour her, a gallant rescuer named Perseus appeared upon
the scene. He was returning from a terrible encounter he had had
with the Gorgons, three monsters of "horrid mien," with writhing
serpents in place of locks of hair, hands of brass, and bodies
covered with scales as hard as iron. Medusa, one of the Gorgons,
surpassed her sisters, in appearance, having an eye of such a
marvelous power, that anyone upon whom she gazed was turned
to stone.

Perseus was assisted in preparing himself for the conflict, by
a good friend named Quicksilver, who gave him a wondrous
shield polished so carefully, that he could see the face of his foe
reflected in it, as plainly as in a mirror, and in this way he was
enabled to see the Medusa, without actually looking at her. He
was also furnished with a sword shaped to cut brass or iron as
easily as a piece of chalk; sandals for his feet making it easier
for him to travel quickly, an invisible helmet, and a wallet in
which to place the head of the Medusa.

Thus equipped, Perseus started on his journey, and succeeded
in cutting off the Medusa's head. He put it in his magic wallet.
and hastened homeward again, little knowing the new adventure
that awaited him. As he was returning through the air, he saw
the beautiful Andromeda:

"Chained to a rock she stood; young Perseus stayed
His rapid flight, to woo the beautiful maid."

He promised to save her and destroy the monster, if her father
Cepheus would give her to him in marriage. Cepheus consented,
and Perseus turning the head of the Medusa towards the sea-
monster, it was instantly turned into stone. It appears that An-
dromeda had been promised in marriage to Phineus her uncle,
who was so engaged on hearing that Perseus had won his prom-
ised bride, that he engaged with him in a terrific combat. How-
ever, Perseus again made good use of the head of the Medusa,
and turning it upon his foe, the latter was turned to stone, a
lasting monument of the folly of revenge. In the old star maps,
the bright star Algol, is represented as the eye of the Medusa,
and a baneful influence was attributed to it by the Arabians on
account of its varying light, for which reason they called it the
"Blinking Demon."

New York City.

The Butterfly.

By NELLIE M. BROWN.

"Where do you come from, butterfly bright?"
"I was born in the dawning, I live in the light."
"Your wings, light as down on the breast of the swan,"
"They are woven each day from the mists of the morn."
"Who gave to your plumage such glorious dyes?"
"The artist but copied the sunset skies."
"Stay with me, pretty wand'rer, no longer to roam."
"Earth gives me no dwelling, the air is my home."
"Fly here, and fly there then, you gay little rover,
But sing me one song ere you hasten away."
"I have no song; song endureth forever;—
Beauty alone is but for a day."

Mathematics.

Inventional Geometry.

By MACLEOD.

Have a pupil write these questions on the blackboard and ask the class to answer in writing and drawing as many of the following questions as they can. The key is to be found on page 620.)

1. Within a semicircle describe a circle. (Fig. 1.)
2. What are the relative lengths of the diameters of the circle and semicircle?
3. Draw an equilateral triangle and find its center. (Fig. 2.)
4. Explain the process.
5. Within the triangle describe a circle. (Fig. 3.)
6. What is the center of the circle?
7. What do you take as radius of the circle?
8. Can you draw a circle in any other kind of triangle?
9. Describe a circle in a right-angled triangle.
10. Draw a circle and divide it into three equal parts. (Fig. 4.)
11. What line did you draw through the center of the circle?
12. With what radius did you mark off a distance each side of one extremity of this line?
13. Can you draw an equilateral triangle on a circle? (Fig. 5.)
14. Can you construct a rhombus, one diagonal being twice the length of the other? (Fig. 6.)
15. What are similar triangles?
16. Can you draw two similar triangles? (Fig. 7.)
17. What parts of similar triangles are equal?
18. What are the first steps in drawing one triangle similar to another?
19. Make a rhomboid and see in how many ways you can divide it into two parts of equal size and similar shape? (Figs. 8, 9, 10, 11.)
20. What forms do the divisions assume in Figs. 8 and 9?
21. What kind of a line have you drawn within the rhomboid?
22. What figures are formed by the dividing lines in Figs. 10 and 11?
23. Draw a square and see how many equal squares may be drawn around it to touch it. (Fig. 12.)
24. Can you draw a square and place an equilateral triangle on each of its sides? (Fig. 13.)
25. Can you reverse the plan and place a square on each of the sides of an equilateral triangle? (Fig. 14.)
26. Draw two lines which will cut each other and indicate the angles which are *vertical* to each other. (Fig. 15.)
27. Refer to Fig. 12 and name all angles which are vertical to each other.
28. Draw two squares so that one angle of one square will vertically touch one angle of the other square. (Fig. 16.)
29. What kind of angles are those thus placed vertically or opposite to each other?
30. Draw the diagonals of each square.
31. What kind of angles have you formed within the square around the center?
32. What fact may be deduced from these experiments with vertical angles?
33. Explain difference between *intersecting* and *bisecting* lines?
34. What is the difference between an *inscribed* figure and a *circumscribed* figure?

A Year in Number.

A REVIEW.

(This is a review in an ungraded school, where there are four classes. It should not be to show great things done in any one of the classes, but a just amount of work in number lines along with other work in other lines.)

THE D CLASS.

1. They can take objects up to 12, illustrate the combinations.
 2. They can add single columns not over 20.
 3. They can express numbers up to 20 by figures.
 4. They can make problems using these combinations.
 5. They can use toy money and make change for purchases.
 6. They can tell one-half of 2, 4, 6, 8, 10, 12; one-third of 3, 6, 9, 12; one-fourth of 4, 8, 12.
 7. They will know the Roman numerals up to 20.
 8. They will know the gill, pint, quart; inch, foot, yard; week, month, year; dozen.
 9. Will distinguish and combine halves, thirds, fourths, eighths; change halves to fourths, fourths and halves to eighths and reverse.
- It is probable the class will be in two groups as respects progress—those who came in last September will accomplish the above; those who were in the D class the year before will be able to do more. They will
10. Know all the combinations up to 20.
 11. Add by twos, threes, fours, fives to 20, or more.
 12. Subtract by twos, threes, fours, and fives, from 20.
 13. Make a few problems with two figures.

14. Make diagrams to illustrate problems.
15. Make tables in addition, subtraction, multiplication, and division, as far as taught.
16. Know the signs $+$, $-$, \times , \div , $=$.
17. Know fractions up to tenths.

THE C CLASS.

18. Write numbers to 1,000. Add and subtract by twos and units.
 19. Make a multiplication table to 12×12 ; add and subtract by twos, etc., to 50.
 20. Make and solve *easy* problems in length, surface, capacity, time, and values.
 21. Take fractional parts of divisible numbers; especially handling 12, 20, 24, 25, 30, 36, 144.
 22. Continue fractions and extend to fiftieths; express them by numbers.
 23. Know Roman numerals to 1,000.
 24. Solve suitable mental problems.
 25. Add single figure columns.
 26. Able to write any number to 1,000.
 27. Able to add and subtract numbers with three figures.
 28. To multiply such numbers not greater than 12.
 29. Know the tables of liquid and dry measure, of long and surface measures.
- As this class will probably consist of two groups, the advanced division will be able to do some work beyond what is stated.
30. Write numbers to one million, and decimals to thousandths.
 31. To multiply and divide when multipliers and divisors have three places.
 32. To add columns of United States money.
 33. Add columns in three figures with rapidity.
 34. Able to solve problems mentally.
 35. Make and solve problems of two operations.
 36. Change fractional numbers to integers and mixed numbers and reverse.
 37. Change fractions to larger and smaller terms.
 38. Combine like and unlike fractions under twelfths.
 39. Reduce compound denominate numbers.
 40. Write Roman numerals to ten thousand.

B. CLASS.

41. Be able to write numbers to billions.
 42. Unite decimal fractions to ten thousandths or more.
 43. Add and subtract decimals.
 44. Multiply and divide decimals by integers.
 45. Apply the four operations to like and unlike fractions.
 46. Divide one sum of money by another.
 47. To know the properties of numbers like factoring.
 48. To find L. C. M.
 49. Know how to multiply fractions and understand compound fractions.
 50. Solve problems in measuring surfaces; find contents of rooms, piles of wood, etc.
 51. Make problems from observing and measuring rooms, etc.
 52. To measure triangles and circles.
 53. To understand and work in percentage.
 54. To solve and analyze problems.
- There will be advanced pupils in the B class; these may take up work like the following:
55. Make bills and receipts.
 56. Keep cash and personal accounts.
 57. Pursue work in fractions with system (a) change; (b) odd like, then unlike; (c) multiply; (d) divide and reduce.
 58. Change common to decimal fractions and reverse.
 59. Change per cents. to fractions and reverse; turn per cents. of numbers into fractional parts.
 60. Give solutions of problems in a systematic form on paper and blackboard.
 61. Handle the usual problems of the business world—the buying of merchandise; problems of two and three operations.

A. CLASS.

61. Understand compound numbers as usually presented in books; with fractional applications.
 62. Begins to know the elements of the metric system.
 63. Knows readily the fractional parts of 100 as one-half, one-third, etc.
 64. Also of 30 (days in a month), and of 60 (minutes in an hour), 24 (hours in a day).
 65. Works in percentage without time.
 66. Applies percentage (as hundredths) to all sorts of things.
 67. Handles problems in a systematic manner.
- This class will have two divisions undoubtedly. The advanced division will have learned as follows:
68. The application of percentage to profit and loss, commission and brokerage stocks and insurance.
 69. Its application to interest, simple, and compound, etc.
 70. Discount and bank business.
 71. Commercial papers.
 72. Ratio and proportion.
 73. Involution and evolution.
 74. Mensuration of surfaces.

Letters.

Ethical Culture Society's Schools.

PEDAGOGIC STOCK-TAKING AT THE END OF TWENTY YEARS.

Last week Felix Adler's "Society for Ethical Culture" in a modest but dignified manner celebrated the twentieth anniversary of its foundation. While the formal exercises on Friday evening were specially devoted to well-deserved felicitations of the parent organization by its societary offspring in Chicago and Philadelphia and to critical retrospect as well as prophecy by Prof. Adler himself—the main stress was very properly laid on the society's educational efforts, to its philanthropic application of pedagogy to ethics as exemplified in the "Workingmen's School," so called, in the Kindergarten Training School conducted therewith, and in the branch school established but a year ago, which is being developed into a classical high school and after the pattern of which it is hoped in the course of time to evolve two other high schools for special rather than technical training in the arts and sciences, respectively. It is an honor to be entrusted with the responsible task of rendering a critical account of the educational exhibit and the concurrent reports and explanations made by Supt. Groszmann and the faculty of these schools—and a pleasure withal, though the exigencies of time and space forbid as full and detailed a report as the occasion would seem to warrant.

ENGLISH COMPOSITION.—Miss Dunn made and insisted upon the point that, however closely the curriculum might co-ordinate the several "branches," whether factitiously and fancifully, or philosophically and practically—the true function of "composition writing" from start to finish is *self-expression*. Hence, first of all, a teacher must be able to grasp and be willing to respect not only the pupil's precise stage of mental development but also the particular point of view from which the child makes his observations and deductions. As a true test for the conceptional contents and ratiocinative processes of the pupil's mind, step for step in its development, only this practice in untrammelled self-expression will serve. And in this way, only, will the teacher be able to recognize and to encourage such individual trend and tricks of expression as should be faithfully developed because constituting the young author's own characteristics of style in the bud. It goes without saying, therefore, that neither conventional elegance of diction, as such, much less the approved rhetorical standards; nor even, as an end *per se*, correct grammatic construction are to be primarily insisted upon or ultimately over-emphasized. In content and expression the *Schablone* is abhorred and even the "classical model" should be made to serve as an inspiration rather than as a corrective or as a restraint.

LATIN AND GREEK.—Mr. Coburn, to be quite frank, was not as happy in the presentation of his educational methods. Of course, one agrees with him that the mere structural analysis of the classics involves a woful waste of time and mind, whether its *dissecta membra* be studied anatomically, as in the good old "disciplinary" days of "Andrews & Stoddard's" grammar; or physiologically, in the latter day manner of Ollendorf-Jones' primer. Nor need our boys and girls read their classic texts for the content alone, when good translations in the vernacular would serve as well, or even better. Then why this cult of the classics; why, forsooth, in these latter days of the nineteenth century? Mr. Coburn's notion, reduced boldly and baldly to its lowest terms, seems to be that if but rightly interpreted the syntactic structure of these two dead languages demonstrates to a nicety the dominant national spirit of either civilization. Latin, the Roman ideas of law and order, of deed and power; Greek, the Hellenic ideals of thought and theory, of art and beauty. As with a pedagogic red crayon the linguistic evolution of the Mediterranean peninsular civili-

zations of the "classic" period is thus alleged to have drawn the straight line of strength and the curve line of beauty so that all may read who run. Therefore and thus must the study of Latin and Greek persist. *Schöner Gedanke!*

KINDERGARTEN.—It was a well-merited tribute which Dr. Montser paid to Miss Haven when he exalted above all the culture value and the technical training which the Society's Kindergarten Normal Course admittedly affords its pupil teachers, the true spirit of Froebel which forms, so to speak, the scholastic atmosphere with which this cultured woman manages to surround her pupils. With equal grace and like justice might reference well have been made to the actual founder and first principal of this pioneer training school for kindergartners, who chanced to be in the audience. The merits of the dead are all too soon forgotten that we can afford to ignore our debt of obligation to the living. The educational talents and unselfish devotion of such women as Fanny Schwedler (Barnes) are none too numerous to be ignored on an occasion such as the one under review. Miss Haven made a most convincing plea for the training of *all* girls in the principles and practice of Froebel's pedagogy—the recognition and cultivation of the child's nature and powers for the purpose of character-development being of pre-eminent importance to the young mother. This thought Dr. Montser developed in another direction by cleverly showing how this specific, *i. e.*, professional training is made to serve in Dr. Adler's sense as the center of interest for higher (secondary) training in particular and related culture in general.

MATHEMATICS.—It goes without saying that in this school arithmetic has never been degraded into mere "figgering" nor into the elaboration of "practical" devices for the solution of (text-book) "business" examples either. Numbers and quantities are studied in the concrete and by systematic comparison of their possible and potential combinations and separations, the laws and principles are deduced for their use *qua* "figures," *i. e.*, as symbolic abstractions. When the fundamental processes have been thus mastered and reasonable expertness and accuracy acquired in the manipulation of particular numbers and limited quantities (in the five lower grades), the study of algebra is promptly begun in the sixth. The scholastic aim and pedagogic methods, as admirably explained by Dr. Montser, aim to treat the grammar of numbers like that of language in the same grades, with a view rather to securing a clear comprehension of the broad basic principles of logic, of precise reasoning, than for the purpose of acquiring skill in solving specific problems. Careful preparation for such study of general number is made by the use of devices like the parenthesis, for instance, in arithmetical work; and in like manner from the kindergarten on the study of form shows no gap up to the time (also in the sixth grade), when the actual study of geometry is begun. Thus the Workingmen's School was a radical pioneer blazing the way for the substitution of algebra and geometry in place of the so-called "higher" but really redundant and repetitious "arithmetic" condemned in the famous address of Pres. Eliot and by reports of the Committees of Ten and Fifteen.

SCIENCE WORK.—Mr. Kelly declared himself unequivocally against the formal study of the phenomena of nature and properties of matter, as so many separate "subjects." In like manner he seemed to demonstrate satisfactorily the practical necessity of "class room" as a supplement to "laboratory" work; since, given the same experimental material and conditions of procedure, it by no means follows that the observation and interpretation of facts, let alone the logical deductions therefrom, would coincide with the laws of nature or for that matter among the results of the several pupils themselves. But the burden of Mr. Kelly's address lay in the difficulty of achieving an organic co-ordination in place of the ordinary haphazard injection of "science work" into the school curriculum. Especially great is this difficulty in the higher grades where both the materials and the apparatus, in a word, laboratory, doubt-

less demand departmental instruction. On the other hand, in the lower grades "nature study," in close conformity to the rotation of the seasons, for instance, seems admirably well adapted to serve as the very basis for language study, etc. Mr. Kelly concluded by giving us a bare glimpse at a certain tentative plan of his, approved by Prof. Adler, for correlation into groups of ethical purpose practically adapted to definite periods of instruction, on the one hand, and in harmony with the changes of season, on the other. And this plan, after having had the benefit of actual trial during the coming school year, is to form the subject matter of Mr. Kelly's doctorate thesis.

CRAFT AND ART.—Mr. Bedford who has been director of the manual training work in this school some ten years and whom Miss Haven alone outranks in continuous service on the faculty, explained in an unostentatious and matter-of-fact way how he had put into practice and worked into detail Dr. Adler's demand for a continuous curriculum of tactile training and manipulatory method which should "carry up" the principles of the kindergarten and "bring down" the material of the manual training school proper. Wedding of "gift" and tool, so to speak; the evolution of inventive symbolism into model-making. Mr. Bedford's special merit—allowing the psychologic soundness and pedagogic value of the method to go unquestioned, *pace* Adler—is found in the clever use made of blocks derived from the cube in building, of slats derived from the splints in construction, and of soft wire in bent and hammered metal work, for the first four grades. Neither the exhibits nor the explanations of the "art work," so-called, could be fairly judged by any observers other than the child's own teacher, or at all, perhaps, at the close of but a single year's trial of that obviously sound principle that the real, individual expression of the child's mental pictures, and not a painstaking outward conformity with the object whose reproduction in clay, color, or line is attempted by the pupil should, at all stages, govern. Here the process, the evolution of expression alone counts, and not the result, as such.

I may be permitted to close this inadequate, though sympathetic descriptive commentary of the, all things considered, most worthy, as well as promising inventory ever attempted by an educational institution in the city of New York—with the conclusion that, whatever else may be true of Felix Adler's schools, their real purpose undoubtedly is *vitam impendere vero*. Higher aim is impossible. And in the end the truth shall make us free!

E. W. KRACKOWIZER.

New York, May 18, 1896.

Additions to Journal Summer School List.

The Eastern Summer School of the American Institute of Normal Methods at Brown university, Providence, R. I., July 14 to 31. Departments of vocal music, drawing, penmanship, (including vertical writing), physical culture and the synthetic method for the pianoforte. Address Albert A. Silver, business manager, 110-112 Boylston St., Boston.

The Western Summer School of the American Institute of Normal Methods at Northwestern Military academy, Highland Park, (near Chicago, Ill.), July 14 to 31. Departments of vocal music and drawing. Courses will also be given in penmanship, (including vertical writing), physical culture and the synthetic method for the pianoforte, that provided that five teachers register for each course before July 1. Address O. S. Cook, business manager, 262-264 Wabash Ave., Chicago, Ill.

"I cannot do without OUR TIMES. THE SCHOOL JOURNAL, too, of which I am a subscriber, is beyond price, filled as it is, each week, with good things." E. RISTE.

Wymore, Nebr.

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Editorial Notes.

The question of co-education in the grammar and high schools is by no means solved. A number of physiologists and psychologists ought to take up the matter to establish some definite rules for the guidance of educators.

Much of the nature study carried on in the schools is nothing more than a new form of word-cramming. Is this study is to be worth anything it must really open the senses and the heart of the pupils to drink in the wondrous phenomena in nature's laboratory. *Anschauung*—direct, living, deep *Anschauung*—must be cultivated.

An illustration used by Prof. Perkins, of the University of Nashville, in a recent lecture, is striking in this connection. "No doubt," he said, "gymnastics is good, but why should a gymnast sit on a dummy bicycle and make his feet go on a crank and brake when there is a bicycle at the door on which he might get somewhere." Pestalozzi's pupil wondered why a picture of the ladder should be drawn on the blackboard when the object itself was near at hand. There is still too much riding on text-books and "flat copy" in the schools.

One of these days the teacher will arouse to the evil coming from cigarette smoking by their pupils. They now see it but are not impressed with the magnitude of the evil. Concerted means should be taken to war against it. We believe that when the teachers unite in this matter the evil can be suppressed; they will find the parents with them when they are in earnest.

It is not every teacher who is in a position to safely confess a failing to her pupils. Ask yourself what would be the effect if you should take the blame for a poor day partly to yourself. Should you lose caste with your pupils and lessen your controlling power over them? If so, the attitude of teacher and class toward each other is not right in your school. You and the children should feel yourselves co-workers, not taskmaster and slaves. The children should be allowed, too, to realize that you are human and need their help. But there is everything in tact. A whole-souled teacher can say, "That was my fault—I can't blame any of you for it," and be more respected by her class for her frankness. But if goody-goodyness enters into the spirit of such admissions, discipline is gone. Let the mouth utter only what the heart feels. But let our hearts be busy with our pupils always.

Leading Events of the Week.

The American liner, *St. Paul*, beat the record by crossing the ocean at an average speed of 20.34 knots per hour.—The city of Moscow is a mass of brilliant colors in honor of the czar's coronation.—The first battalion of the American Guard, the New York city school by militia, visits Washington, inspects the government buildings, and is reviewed by President Cleveland.—Consul-General Lee is instructed to protect Americans, previous to his departure for Cuba.—President Kruger cables to Mr. Chamberlain, the British colonial secretary, saying that the sentences of the members of the reform committee will be neither canceled nor commuted until Cecil Rhodes leaves Africa.—Lord Spencer, ex-lord lieutenant of Ireland, traveling in the United States.—Extensive forest fires in South Jersey, Long Island, and the Adirondacks.—The New York *Journal* presents a jeweled sword to Maximo Gomez, commander-in-chief of the Cuban army. Longfellow's cottage at Nahant burned.—The Spanish press professes indignation at Senator Morgan's charges that the war in Cuba is being prosecuted in a brutal and bloody manner.—The national Baptist societies meet at Asbury Park, N. J.

Educational Affairs in New York City.

It was announced that a superintendent for New York City would be chosen this week. But the board of education at its regular meeting on Wednesday decided to take no action, but to delay the election till Thursday next, May 28. The reason for this move was the surprise caused by the announcement made on Tuesday evening that the opponents of Mr. Jasper had united upon the nomination of President Gilman, of Johns Hopkins university. So strong a candidate had not been expected, and when it became known that Dr. Gilman had consented to have his name presented for the place, the commissioners who favor the retention of Mr. Jasper immediately rallied and succeeded in getting the board to adopt a resolution giving them time for a full consideration of the changed situation.

One of the commissioners is quoted in the *Sun* as stating that he believes a majority of the board will vote for Dr. Gilman, who, he says "has shown himself to be a wonderful organizer wherever he has been placed—in his conduct of the Sheffield Scientific school at Yale, in the University of California, and later at Johns Hopkins." The interviewed commissioner is anxious to have it known that the nomination of Dr. Gilman is not intended as an "anti-Jasper movement," but "a pro Gilman movement made in the interest of the public schools of New York City."

It now looks as if the supporters of Mr. Jasper among the commissioners are agreed that it would be most desirable to have the services of Dr. Gilman, but they also hold that Mr. Jasper should be retained as general superintendent. Accordingly they have made a move that promises to solve the question in a way that will satisfy most of the friends of the schools. This move has a little history, a few points of which may help to make the situation clear to readers of *THE JOURNAL*.

At a "harmony dinner" of the board of education given some time ago the question was discussed "in secret" whether it would not be wise to relieve the general superintendent of some of the duties imposed upon him by the new law. The conclusion seems to have been reached that a "director of pedagogy" should be appointed to have general charge of the purely professional work of the superintendency while the city superintendent should be the chief agent of the board and responsible head of the whole school system. In other words, the superintendent would under this plan occupy a position similar to the school director in Cleveland, Ohio, while the "director of pedagogy" would be the chief expert adviser of the board in all questions pedagogical, and have control over the inner work of the schools. Considered purely on its intrinsic merits the plan cannot but find favor with all who have made a study of city school systems and is in accord with the recommendations made by the Committee of Fifteen in the report on "City School Systems."

There was some doubt, however, whether the board would have power to divide the duties of the superintendent in this manner. But a decision of the corporation council clearly established its right to carry out the suggested plan. Accordingly at the meeting this week a resolution was adopted, on motion of Commissioner Benville, referring the consideration of the matter to a committee with the distinct understanding that the board is in favor of the appointment of a special director of pedagogy.

What the outcome will be of course cannot be foretold with certainty, but there are reasons to believe that the plan will be ultimately adopted. Mr. Jasper, in all probability, will be elected as general superintendent in the sense of chief executive on the business side of general school supervision and control, and some eminent professional educator, perhaps President Gilman, will be made "director of pedagogy," in the sense of chief executive officer of the inner work of the schools and expert adviser in all matters pertaining to pedagogic policy and organization.

However, it is extremely doubtful whether the opponents of Mr. Jasper will agree to this. They fear that president Gilman might not be willing to take either the general superintendency or the directorship of pedagogy under the proposed scheme. Still it would seem that he could be induced to accept the latter position if its powers should be made so far-reaching that the whole policy of the educational work would be affected thereby. Furthermore, the majority of the board appear to be willing to fix the salary of the "director of pedagogy" at \$10,000 a year at least, perhaps even \$12,000 or more.

The *Evening Post* on May 14, denounced Superintendent Jasper as "confessedly ignorant of the history, theory, and art of education." On May 15, it heard that *THE SCHOOL JOURNAL* was going to write an article appreciating Mr. Jasper's indefatigable services, and, hoping to forestall the effect this might have upon the board of education, it declared that *THE JOURNAL* had favored the Strauss bill. It has always been claimed that the *Post* moved on a high journalistic plane, but here it lies concerning the attitude of *THE JOURNAL* towards the Strauss bill and meanly attempts to forbid a just appreciation of a man the board of education has felt was fit to hold an important office for sixteen years. It was not what *THE JOURNAL* had said, but what it feared it would say! What a *Post*!

It is learned on good authority that either this or next week the chair of psychology and general philosophy in the college of the City of New York will be filled. The indications are that Dr. McNulty will be chosen, though some believe that Dr. Jamieson, the present assistant superintendent of schools, will be the successful candidate. Both are eminently qualified for the professorship.

The board of education has decided to elect assistant superintendents under the new law at its next regular meeting, on Wednesday, June 3. It is expected that the number will be fifteen. The majority of the present superintendents will be re-elected.

Who the inventor is of the new system for the New York city schools is perhaps a matter of less consequence than the system itself. *THE JOURNAL* considered Dr. J. M. Rice entitled to considerable credit, but the *Educational Review* scoffs at him as "a little known magazine writer" and as an "expert in pedagogy" (called so jocularly). This being the case he cannot have had a hand in it, of course.

Governor Morton has signed the bill permitting the bonding of New York city for \$5,000,000 to provide for more school facilities.



STATE NORMAL SCHOOL, LOS ANGELES, CAL. Prof. E. T. Pierce, Principal.

Vacation Schools.

NEW YORK CITY.—For two years vacation schools have been maintained during six weeks of the summer, the school being free to any child who wishes to attend. Instruction is given in games and kindergarten exercises, music, clay modeling, drawing, and sewing. In 1894 the average attendance was 933, at a cost of 11.5 cents per day for each child. In 1895 the average attendance was increased to 3,296, at a cost of 5.6 per day for each child.

The New York Association for Improving the Condition of the Poor advanced the funds last year to pay the salaries of teachers and have pledged themselves for \$5,000 for this summer's expenses. The managers have issued an appeal sanctioned by the board of education for assistance. Checks and money may be forwarded to Warner Van Norden, treasurer, 25 Nassau street, New York.

To Promote Patriotism.

NEW YORK CITY.—The Patria club has offered a series of prizes for excellence in certain patriotic studies and exercises, the competitors to be selected classes of children from the schools of the American Female Guardian society and the Children's Aid society. The tests will consist of a form of salutation to the American flag, the singing of patriotic songs, and an exercise relative to the Declaration of Independence, setting forth its spirit and purpose. The prizes will be three engravings of historic scenes in American history and a bust of Benjamin Franklin.

A prize of \$50 has also been offered for the best kindergarten exercise designed to develop a spirit of patriotism among kindergarten children.

The competition will take place at Association hall, Fourth avenue and Twenty-third street, on the afternoon of May 29.

Writing Notes to Teachers.

PHILADELPHIA.—If the notes and excuses received by teachers from parents could be collected they would make an unique contribution to literature. Here are some specimens received by some teachers of this city:

A teacher in a Brainbridge street school received this note: "Jakey ish dumb he don't no nodings; i fish aber ash you would klub him mit er ruler or a club if you don't have none to oblige his father i will obscure you some and can consider it a personal favor if you will klub his fader."

She naturally concluded that "his fader," wished the boy punished for neglect of studies, and kept him in at noon one day. The next day the father came in from his work, his clothing redolent of oil and grease, and threatened to smash the teacher's nose and throw her down stairs. At last he made it understood that he wished "Jakey," who carried his dinner, whipped, instead of being detained at the noon hour.

A teacher in the same school received the following advice as to a curriculum:

"Pleas to teach my girl readings and ritings and never mind monkey doodle biness about cutting out paper dolls mit sisors; i am a tailor and i know how too cut tings out better as you can learn; never mind about dot monkey doodle biness."

One teacher, who teaches clay modeling, is likely to have laundry work added to her many duties, judging from this remonstrance from an irate mother:

"Mikey kem home to-day wid his close all smeard wid mud. Me ould man carries the hod, and, glory be to goodness, but it is enuf to hev to klane the mud of his close widout havin' to klane Mikey. The vry next time yez send him home wid mud i'll send his close back to yez to wash."

Scientific temperance teaching is not smiled upon by some fathers, as the following note shows:

"Mind your own bitzness of you plees. Hans tells me every time i trink bier dot it rubs off der overcoat mid my stomach. I trink bier shust as long as i live, and i no my bitzness. Stop dot nonsenses about bier and deach dot boy somedings vot he don't know."

A clothing dealer offers a suggestion regarding his son's studies:

"I dink dot it vuld pe a good ding ef you vas two teach Israel how tu make shange instead of teaching him how to draw picturs on der slate and paper. If you can deach him how to make change so dot he could be py der store tu wait on customers on Saturday, it vould please his father to obige his muther's sister. His own mutter is ded und buried."

An excuse for absence from school runs as follows:

"Dear Teacher—Eskuse Oscar for not being in school yesterday. I took him out to see his little brother's grave for a little fun."

A self-satisfied parent writes a note to the teacher:

"I don't know what makes Stanislaus so dum. I myself am an eddicated man; i kin talk three landiniques with fluently, and i am also an apothecary, pooty near as good as eny doctor. Drop around to the store and see me some time when i am in."

And a woman with a son who "couldn't tell a lie," frees her mind to the teacher:

"My child is as good if not beter than any uther boy or girl in

your schole. Now you say that he told you a pack of lies; if you say that you are a lire yourself; i am h's mother, and he's no lire i want you to no; he couldn't take aft me and be a lire; if he tuk after his father he would be a lire; as it is he ain't; if you say that he lies again i'll make you prove what you say."

Some Well-known County Superintendents.

PHILADELPHIA, PA.—The following county superintendents have received an increase of salary. Samuel Hamilton, of Allegheny county, and J. C. Taylor, of Lackawana county, each have an increase of \$1,000. Mr. Hamilton now receives \$5,000, which is the highest salary paid to any county superintendent in the United States.

R. F. Hoffecker, of Montgomery, and W. F. Hoch, of Northampton, were raised from \$2,400 and \$1,400 to \$2,500 and \$1,500. W. F. Zimbrow, of Franklin, receives \$300, and C. L. Gramley, of Centre, \$200 over the former salary.

Mr. Geo. W. Weiss, of Schuylkill county, was re-elected by a handsome majority. Supt. Weiss has held the office since 1881.

M. C. E. Moxley, of the Halsted graded school was elected superintendent of Susquehanna county to succeed Supt. W. B. Gilbert.

Mr. Emerson's Up-Hill Work.

It will not be the fault of Supt. Emerson if anything is lacking in the preparations now under way to make the N. E. A. meeting at Buffalo this summer an unqualified success. For several months he has labored day and night to provide for a creditable reception of the association. The immensity of his task will be fully understood only by those who know how slow the citizens of Buffalo are in appreciating the honor that is paid to their beautiful city and the advantages, financial and educational, they will derive from the great convention. First he made an attempt to have the city appropriate a few thousand dollars toward the entertainment fund. By hard and persistent work he finally succeeded in obtaining a small grant, only to see himself deprived of it again a short time after by a rescinding action of the board of aldermen whose ideas of municipal economy are of a very primitive kind. Aided by the local committee of the N. E. A., of which he is the executive head, he next tried to get moneyed corporations and private individuals to interest themselves sufficiently in the approaching convention to assist with handsome contributions. The tardy response of these people gave but little encouragement. Finally he saw himself driven to an appeal to the teachers who would be sure to come to his support by aiding in the collection of contributions. THE JOURNAL has already referred to this with regret of the necessity of the step. Mr. Emerson expressly stated that the teachers should use their own judgment in the matter and consider themselves in no wise bound to contribute. Every fair-minded person will recognize that he did the best he could under the discouraging conditions. But the citizens of Buffalo are to be blamed that sources which usually supply liberal contributions did not open early and abundantly enough to relieve the anxiety of Mr. Emerson and his associates on the local committee in an emphatic manner.

Announcement of Association Meetings.

- June 3.—Alabama Colored Teachers' Association at Anniston.
- June 10.—Tennessee Colored Teachers' Association at Chattanooga.
- June 16.—Texas State Association of Superintendents and Principals.
- June 16-22.—North Carolina Teachers' Assembly, Asheville.
- June 17-19.—Texas State Teachers' Association at Austin.
- June 18.—Utah State Teachers' Association at Salt Lake City.
- June 22.—Washington State Teachers' Association at Spokane.
- June 23.—North Carolina Colored Teachers' Association at Kittrell.
- June 23.—Texas State Association of Colored Teachers at Corsicana.
- W. H. Broyles, Hearne, president.
- June 23-25.—Thirty-fourth annual meeting of the Missouri State Teachers' Association at Fertle Springs. President, J. M. White, Carthage; Sec'y., E. D. Luckey, Ellettsville School, St. Louis.
- June 23-25.—Twenty-ninth session of Arkansas State Teachers' Association at Arkadelphia. T. A. Futrell, Marianna, Pres.; J. J. Doyne, Lonoke, Sec'y.
- June 24-26.—Thirty-fourth annual meeting of the University Convocation of the State of New York, Albany, N. Y. Supt. Leigh R. Hunt, Corning, N. Y., Chairman.
- June 29.—Georgia Colored Teachers' Association at Athens.
- June 30, July 1, 2.—Alabama Educational Association at Talladega.
- July 1, 2, 3.—Fifty-first annual meeting of the New York State Teachers' Association at Rochester. President, J. M. Milne, Oneonta.
- July 6, 7, 8.—Conference of Expression at Boston. Address Miss Helen M. Cole, 458 Boylston St., Boston, Mass.
- July 7-10.—National Educational Association at Buffalo, N. Y. President, Supt. N. C. Dougherty, Peoria, Ill., Secretary, Irwin Shepard, Winona, Minn.
- July 7, 8, 9, 10.—Music Teachers' National Association at Denver, Colo.
- July 9, 10, 11, 12.—American Institute of Instruction at Bethlehem, N. H.
- July 14-31.—Georgia State Teachers' Association at Cumberland Island.
- July 21-23.—Tennessee State Teachers' Association at Humbolt.
- Oct. 14, 15, 16.—Fourteenth annual meeting of the State Council of Superintendents at Utica.
- December.—Holiday Conference of the Associated Academic Principals at Syracuse.
- December.—Fourth annual meeting of the Association of Grammar School Principals, at Syracuse.
- New Jersey State Teachers' Association at Trenton, in December. S. E. Manness, Camden, Pres.; J. H. Hulsart, Dover, Sec'y.

The Presidential Election.

By the EDITOR OF "OUR TIMES."

How many of the young people who celebrate the Fourth of July with fireworks, bonfires, etc., ever think of the origin of the celebration and what it means? You say it was the day the Declaration of Independence was signed. Who wrote that document and what does it mean? Was the government as it is established right away? How long did the war last? What were the Articles of Confederation? Why did they fail? What took their place? (The constitution.) Who was the first president under the constitution and when? Then it took thirteen years, from 1776 to 1789, to establish our government on the present plan with a president, but its establishment was the result of the adoption of the Declaration of Independence.

You see now the connection between the Fourth of July and the presidency. The Declaration of Independence made a republic with a president possible. This year the boys and girls ought to celebrate the Fourth of July with special thoughtfulness, as we are on the eve of a presidential election in which great things depend.

How the President is Elected.—When a man goes to the polls in presidential year he does not vote directly for the candidate for president, but for a list of electors corresponding in number to the number of representatives in Congress and United States senators from his state. Since the formation of parties these electors invariably represent a certain political party, and the voter usually votes the entire list, though he can substitute names if he likes. The Republicans, Democrats, Populists, Prohibitionists, etc., each nominates a list and the persons getting the highest number of votes cast the electoral votes of the state for president and vice-president.

Although the election actually takes place in November, there is a formality to go through with before the president and vice-president can take their seats. The chosen electors of each state meet at the capital of their own state on the first Wednesday of the next December and cast their ballots, voting separately for president and vice-president; and a majority of the whole number, adding together the votes from all the states, elects the candidate. After the vote is taken the electors in each state make three accounts of the result, seal them up, and certify that they are correct, directing two of them to the president of the senate at Washington. One copy is sent by mail and one by a special messenger; the third is delivered to the judge of the district where the election was held. On the second Wednesday in February Congress meets all together for the purpose of counting these votes. The senate proceeds to the house of representatives,—the president of the senate opens the returns, the votes are counted, and the result declared.

Although no one votes directly for president every one who votes has as much a part in the election as though he voted directly for the candidate. It is the duty of every native and naturalized voter to cast his vote, and it should be an honest, unpurchased vote. The man who sells his vote is a traitor to his country, which should have in the election an honest expression of the convictions of its citizens.

National Conventions.—Several conventions will soon be held for the nomination of candidates for the presidency. The Republican convention will meet in St. Louis, June 16; the Democratic convention in Chicago, July 7, and the Prohibition convention in Pittsburg, May 27.

For the Republican nomination for president there are a large number of candidates, but William McKinley, from the published reports, seems to have the best chance for the nomination at present. Still there are other strong candidates, as Speaker Thomas B. Reed, of Maine; Senator William B. Allison, of Iowa; Governor Levi P. Morton, of New York. It is somewhat doubtful if ex-President Harrison will be a candidate. The Democratic nomination is sought by Secretary Carlisle, of Kentucky; ex-Gov. Campbell, of Ohio; Wm. R. Morrison, of Illinois; ex-Gov. Pattison, of Pennsylvania; Senator Hill, of New York; Gov. Matthews, of Indiana, and others. There will be a Prohibition candidate and in all probability a Populist or a free silver candidate, but who these will be it is impossible to predict with any degree of certainty.

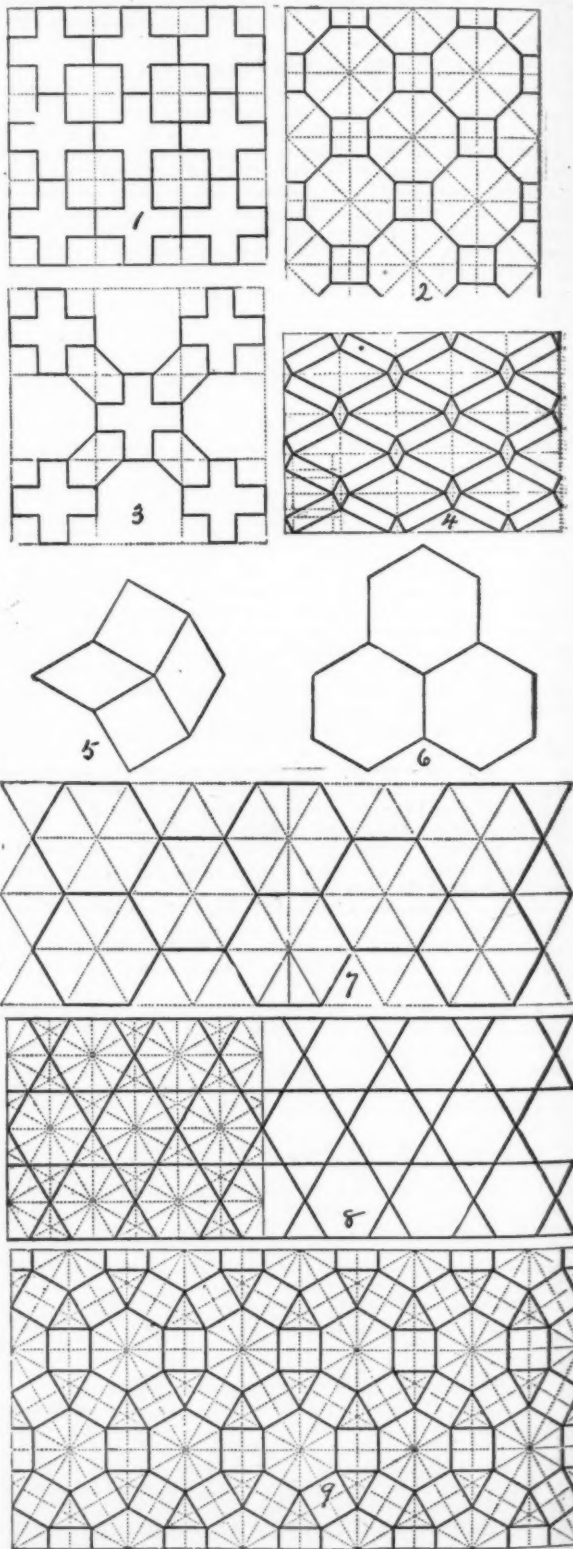
The Issues.—The money issue will undoubtedly play a great part in this campaign. The Eastern and North Atlantic states generally favor a strict gold standard. In the West and many of the Southern states there seems to be a strong sentiment in favor of the coinage of gold and silver on the basis of 15 to 1. Many take a middle course holding that this government should not coin money on that basis without the co-operation of other governments. There are many free silver advocates in both the Republican and the Democratic parties. If a free silver candidate is chosen many votes will be drawn off from these parties and the uncertainties of the election increased.

The tariff will undoubtedly be largely discussed in the campaign, especially if Mr. McKinley is nominated by the Republicans. He is universally acknowledged as the chief representative of high Protection. The Democrats will, of course, advocate low duties as usual.

Doing.

Educational Occupations.

Occupation that demands close mental application is suggested in the form given for copying. The pupil should have a neat ruler and a pair of compasses; a try-square is almost indispensable; the paper should be fastened on a drawing board. It will be best to limit the work at first to the pencils; afterward the pen may be used. The best way is for the teacher to procure large sheets of manila paper and draw these figures on it and



Entertainment.

Some Tableaux.

THE GIPSEY'S WARNING.

This tableau is an effective one and may be easily arranged. Make a tent frame of four sticks by placing each pair so as to form the letter A. Fasten them at the top, and cover with sheets. Let five or six girls be dressed like gypsies, with hair braided on the black. They should have black and red in their costumes and as many rings and bracelets as they can get. One girl holds a mandolin. A third braids her companion's hair, decorating it with flowers. She holds a mirror before her face to see the effect. Just before the tent door a large kettle should be hung on crossed sticks, with wood heaped beneath it. A girl dressed to represent an old gipsy crone stirs the kettle. If possible have steam coming from it. If a dish of boiling water is put in the kettle just before the curtain is drawn, it will have the effect of food cooking.

In full view of the audience let an old woman tell a young girl's fortune. She should hold her hand, while the girl looks very earnestly at her. Let her be blonde in contrast to the gypsies. Behind the scene some one should sing softly, part of the "Gipsy's Warning"—"Do not trust him, gentle lady." Burn red light at one side of the stage.

A FEATHER IN HER CAP.

Have a large girl dressed as a grandmother, in cap, spectacles, and quaint dress, with knitting work in her hands. Behind her two children, a little boy and girl come in on tiptoe. The boy laughs and covers his mouth with a handkerchief, and the girl shakes her forefinger at him. They climb behind grandma, put a quill in her cap, then tiptoe out again, laughing quietly, both putting handkerchiefs over their mouths.

A COUNTRY CHOIR.

Arrange several chairs in a semicircle, and let the singers be dressed as quaintly as possible. The boys can give an old time effect to their dress by cutting the high, old-fashioned collars from stiff white paper, and wearing the three-cornered neck kerchief. Coats may be borrowed from older boys and the skirts turned under to look like the old-fashioned "swallow-tail." The girls should wear old-fashioned bonnets, comb their hair over their ears, and if antique dresses cannot be had, shawls may be worn. All hold open singing books, and have their mouths open, as if singing their loudest, but of course there must be no sound. The fun depends upon the variety of expression the characters put on, and the way they hold their heads. Some should simmer, others look very earnest, and another seem to be watching a rival singer. The chorister should stand a little aside, holding a baton, as if beating time.

AULD LANG SYNE.

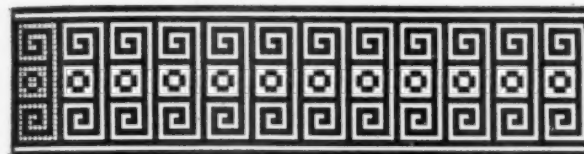
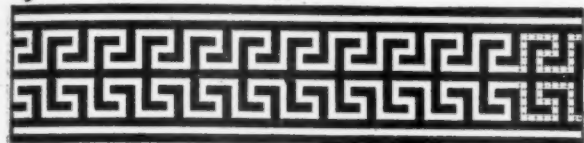
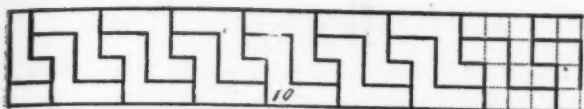
A boy and girl dressed to represent an old couple should be seated in old-fashioned chairs. The heads of both should be liberally powdered, and both should wear glasses. The costumes of both should be as antiquated as possible. Grandma should have her knitting work in her lap, and grandpa the newspaper. A small table holding a lighted candle and a tea service should stand between them. Both hold a cup of tea, and appear to be sipping it. Behind the scenes is sung,

"We'll tak' a cup o' kindness yet,
For Auld Lang Syne."

The Cake that Kate Baked.

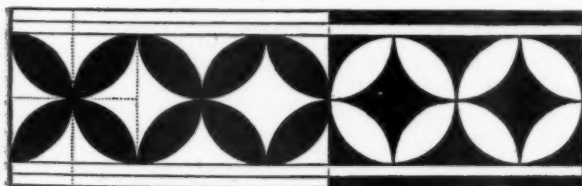
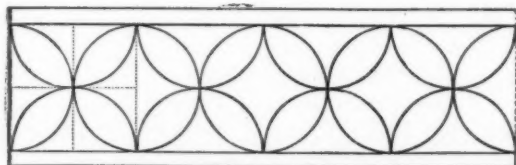
This is the cake that Kate baked.
These are the plums
That lay in the cake that Kate baked.
This is the boy
That ate the plums
That lay in the cake that Kate baked.
These are the ills
That worried the boy
That ate the plums
That lay in the cake that Kate baked.
These are the pills
That cured the ills
That worried the boy
That ate the plums
That lay in the cake that Kate baked.
This is the doctor
Who gave the pills
That cured the ills
That worried the boy
That ate the plums
That lay in the cake that Kate baked.

—Adapted from *London Tid-Bits*.



then numbering them, fasten them to the wall. The first nine are patterns for surface covering; the next six are for borders; these are from ancient buildings and are well calculated to impart skill to the hand and accuracy to the eye.

All these forms will need interpretation to the pupil; there is need of other lines called *guide lines*. For instance, by dividing the upper and lower lines into equal parts, and the side lines into four equal parts, the forms are easily drawn. It is very important that the pupil should learn to depend on guide lines in this form of drawing.



How I Reached One Boy.

When I began teaching in L—, I had in my room that dreaded object, a mischievous boy. He was not a bad boy by any means, but his whole mind seemed to run to fun.

My work was constantly interrupted by Bert's mischief, and failure seemed sure unless something could be done with that boy.

After careful thinking I concluded that moral suasion would do no good and resolved to try severity, I punished until it seemed as if he must of necessity reform, but he only grew worse. My method could not be the right one and so I stopped using it and began to study the case seriously.

One day I asked the children to all the room at recess excepting Bert. When we were alone I called him to me and explained to him that fun harmless in itself would ruin a school. Then I talked about influence. Told him I knew him to be a splendid boy when he controlled his love of mischief. Told him how hard it was for me to govern the others when they saw him disorderly. Here he began to show signs of interest, so I continued to show him in what a difficult position he was placing me in and ended by asking, "Won't you try to control your love of fun for my sake, Bert?" "The reply came slowly, 'I never thought of it like that, Miss Dean, I guess you won't have any more trouble from me.'"

Bert was only an ordinary boy of fourteen, punishment failed, but the idea that he was doing it for me and that I needed his influence in the school was a new idea, and it conquered.

M. B.

A course of medicine to purify the blood is now in order. Take Hood's Sarsaparilla.

The Berrypickers.

By LETTIE STERLING.

Tune: "Mush, Mush." (College Song.)

A motion song in which any number of girls may take part. They should wear sunbonnets and ragged dresses and aprons, and either be barefooted or have on very old shoes. Each girl needs a tin pail of considerable size (they should be alike), and these may be concealed where they can easily be reached at the right time. Pails *full* of berries should be placed *outside* so the empty one can be exchanged without any delay.

I.

1. Enter and walk in a tripping style to the front of the platform.
2. Step backwards until back of platform is reached.
3. Turn and take pails from place of concealment and then face the front again.
4. Standing at the back swing pails in a large circle overhead using right and left hands alternately.

II.

Remain at back of platform.

1. Bend down as if gathering flowers.
2. Still bending down, point toward treetops.
3. Stand erect and point to the sky.
4. Lazily hold pails in front with both hands and sway and swing to the music in a dreamy manner.

III.

1. Walk toward front of platform with pails held upon left shoulders and keep them in that position until 2.
2. Hold pails to show they are empty.
3. Hold them as if brim full.
4. Show the height of the berries by holding hands above pails.

IV.

1. Point toward place.
2. Act as if jumping over a wall (if possible).
3. Make believe pick berries from bushes and drop them in pails.
4. Make believe eat berries.

V.

1. First half of girls attempt to walk away while second half sing.
2. First half halt and reply.
3. Second half answer and all walk out. While out they exchange empty pails for full ones and enter again as they commence the chorus.
4. Put pails in center and recline around them as if in a shady spot to rest.

VI.

1. Point to butterflies and indicate their flitting movements.
2. Hold up pails of berries.
3. Untie bonnets and take them off.
4. Rub hands on the berries that they may become very much stained.
5. Display stained hands.
6. Fan with bonnets as if very warm.

VII.

1. Stand up and tie on bonnets.
2. Take pails.
3. Form in line.
4. March out in triumphal procession, holding pails aloft.

VIII.

Sing softly outside.

I.

We come, a procession so merry, 1
And gaily we trip on our way;
We're going to gather each berry
That hangs on the bushes to-day.
We know all the nooks and the places 2
In which the best bushes are thick,
And that is why smiles light our faces 3.
When we go the berries to—

Pick, pick, pick, tra la la la la, 4
For we shall a-berrying go;
Sing tra la la la la la la,
We know where the berries do grow.

II.

We stoop down to gather the flowers 1
That gladden the path at our feet;
We hear the birds sing in high bowers 2
Up there where the leafy boughs meet;
The sun in the heavens is beaming 3
Too brightly for eyes to behold;
The summer air sets us to dreaming
Some dreams that can never be—
Told, told, told, tra la la la la, 4
Hum on, drowsy bug, drowsy bee,
The sights and the sounds of the summer
Make day dreaming easy and free.

III.

Come ye who are seeking for pleasure, 1
Come ye who are digging for wealth,
Come ye who are wasting your leisure*,
Come ye who are losing your health,

* Pronounced leasure.

Come walk on the road we are treading,
Come gaze on the treasures we see—
Kind Nature before us is spreading
A feast that is rare and is—

Free, free, free, tra la la la la, 2
Our pails are quite empty, you see,
But soon we'll scarce keep them from spilling, 3.
So heaped up with berries they'll be. 4

IV.

Yes, that is the spot over yonder, 1
But first this rough wall we must climb—2.
We think it not much of a wonder
To find it the same as last time.
Ah, now we are busily working, 3
At picking time none of us fail;
There'll neither be lagging nor shirking
Until very full is the—

Pail, pail, pail, tra la la la la, 4
I wonder how many we eat;
Sing tra la la la la la la,
O, berries are juicy and sweet.

V.

Why, girls, you are surely not going, 1
You'll get your pails full, will you not?
We think better berries are growing 2
Just over within the next lot.
March on, then, your leading we'll follow, 3.
We'll journey wherever you say;
We'll walk o'er the hill and the hollow
To get the ripe berries to—

Day, day, day, tra la la la la,
We know where the bushes are best; 4.
Our task has been finished so quickly,
We'll stop a few moments to rest.

VI.

The butterflies flitting all over, 1
Are not half so happy as we;
The honey bees diving in clover
No honey like this e'er can see. 2
We linger with nothing to hurry
And gaze on the beautiful lands; 3.
We've nothing to vex us or worry 4
Unless it be stains on the—5

Hands, hands, hands, tra la la la la,
The days of the summer are warm, 6.
We're glad that the big tree above us
A parasol for us doth form.

VII.

We go, a procession so merry, 1
And gaily we dance on our way,
Because we have gathered each berry
That hung on the bushes to-day. 2
We found all the nooks and the places 3
In which the ripe berries were thick,
And that is why smiles light our faces
And we have our pails full so—

Quick, quick, quick, tra la la la la, 4
Be careful! They'll spill from the pail.
We hope we shall find a good market,
Since we have such berries for sale.

VIII.

Sing tra la la la la la la la,
For we did a-berrying go;
Sing tra la la la la la la la,
We know where the berries do grow.

Summer Time.

By SUSIE M. BEST.

Oh, summer, summer, summer's here,
With suns and showers,
With birds and bees and full-leaved trees,
And gayly-colored flowers.

Oh, summer, summer, summer's here,
Sweet breezes blowing;
In pastures green (their own demesne),
We hear the cattle lowing.

Oh, summer, summer, summer's here,
And earth rejoices;
She sings the praise of lovely days
With all her myriad voices.



Supplement to THE SCHOOL JOURNAL, May 23, 1896.

The Squirrel and

1 and 2. Squirrels.

3. Gopher.

4. Top of rodent.



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and his Cousins.

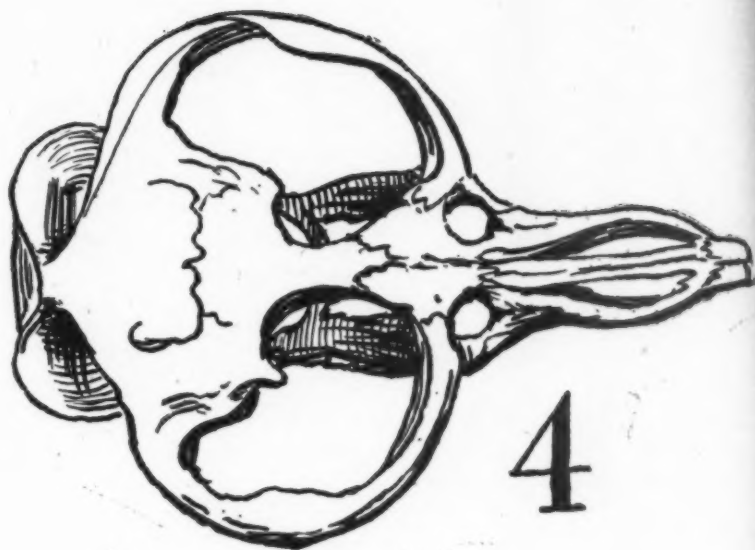
op of rodent skull.

5. Side of rodent skull

6. Rabbit



2



4







The Quangle Wangle Quee.

On the top of the crumpley tree
The Quangle Wangle sat,
But his face you never could see,
On account of his great big hat.
His hat was a hundred and two feet wide,
With ribbons and ribbons on every side.
And bells and buttons and loops and lace,
So that nobody ever could see the face
Of the Quangle Wangle Quee.

The Quangle Wangle said
To himself on the crumpley tree,
"Jam, jelly, and bread
Are the very best food for me.
But the longer I sit on this crumpley tree
The plainer than ever it seems to me
That very few people come this way,
And life, on the whole, is far from gay,"
Said the Quangle Wangle Quee.

But there came to the crumpley tree
Mr. and Mrs. Canary,
And they said, "Did you ever see
Any spot so charmingly airy?
May we build our nest on your lovely hat?
Mr. Quangle Wangle, grant us that!
Oh, please let us come and build our nest
Of whatever material suits you best,
Mr. Quangle Wangle Quee!"

And besides, to the crumpley tree
Came the stork, the duck, and the owl,
The snail and the bumble bee,
The frog and the fiddle fowl,
The fiddle fowl with the corkscrew leg;
And all of them said: "We humbly beg
We may build our homes on your lovely hat;
Mr. Quangle Wangle, grant us that,
Mr. Quangle Wangle Quee!"

And the golden grouse came there
And the pobble, that has no toes,
And the small Olympian bear,
And the dong with the luminous nose,
And the blue baboon who played the flute,
And the Orient calf from the land of Tute,
And the attery squash and the bisky bat,
All came and dwelt on the lovely hat
Of the Quangle Wangle Quee.

And the Quangle Wangle said
To himself on the crumpley tree,
"When all these creatures move
What a wondrous noise there'll be!"
And at night by the light of the mulberry moon,
They danced to the flute of the blue baboon,
On the broad green leaves of the crumpley tree,
And all were as happy as happy could be,
With the Quangle Wangle Quee.

—Hartford Times.

How Jennie Saved the World's Fair Train.

(A True Incident.)

By ANNIE D. REYNOLDS.

Listen, children, to this story, which I now will tell to you,
I am very sure you'll like it, for you see it is quite true.
And it happened very near us,—not far off across the sea,—
But in this our own dear country which belongs to you and me.

'Tis not of a soldier's courage that I now am going to tell,
Nor of sailors, nor of firemen, whose brave acts we know so well.
But a simple truthful story of a small girl's thoughtful deed—
How it saved the lives of many in an hour of greatest need.

On a pleasant day in summer, eighteen hundred ninety-three,
In the fields of fair Ohio, Jennie Clark was wandering free;
And her path lay near a railroad which along a hillside green
Ran upon a wooden trestle built across a deep ravine.

As the little girl came nearer to the trestle bridge she found
That the timbers were on fire, and the flames were creeping round
All the sturdy posts and pillars that had stood so well and strong
While the ponderous cars and engines on their way had rushed along.

Jennie knew that on that railroad soon would pass a World's
fair train,

Hark! already in the distance sounds the whistle shrill and plain!
And she knew that not a moment could be spared to look for aid
Any help that could be given must come from this little maid.

Quick as thought, without delaying, Jennie snatched her skirt of
red,
Waved it as a danger signal as along the track she sped.
Will the engineer see her, will he heed the danger sign?
Yes, already see the slackening all along the flying line.

Just in time had come the warning—if a moment had been lost
And the train had reached the trestle, who could count the
dreadful cost?

But the happy grateful people saved by little Jennie's care,
Crowded round and praised the maiden standing blushing, breath
less there.

On the train were several Frenchmen who had crossed the ocean
blue,

And were traveling to Chicago, there the great World's fair to
view;

And when back to France they journeyed, reached their home
and friends again.

O'er and o'er they told the story how young Jennie saved the
train.

Then the good and generous Carnot; President of France de-
clared

That the Cross of Honor's Legion should on Jennie be conferred.
This, dear children, is a medal, given as perhaps you know,
To those persons who in danger greatest love and courage show.

So this beautiful golden medal which brave men are proud to
gain,

Came from France to little Jennie who had saved the World's
fair train.

And I'm sure she'll always keep it, treasure it with greatest pride,
Show it to her children's children when they cluster at her side.

At the Close of the Day.

By A STRUGGLER.

YESTERDAY.

When half past three had arrived yesterday (or rather just be-
fore it arrived, for the dismissal time being *half past three*, if I
have anything to say I say it before that time and never detain
my pupils by a harangue) I found myself in a disappointed state
of mind. I was tired, but I was also dissatisfied; I felt the day
had not been what I meant it to be. I began to look for the
cause of my disappointment. I have plain talks with my pupils
on all subjects, and so I said—there were five minutes to spare—
"This has not been a good day. I am trying to find the
reason."

A hand was raised.

"Frank Benson didn't have his lesson in grammar."

Another hand was up.

"Our singing was a failure."

And thus several causes were assigned. Then I said:

"I think I have not been just right myself. I see I have been
easily put out and have not been patient. I think I feel better
already for having said this. Let us try for a good day to-
morrow."

Then the bell struck and two divisions rose and marched out,
and then others; all had a smile for me, for I had taken part of
the blame on myself.

TO-DAY.

I cannot tell whether all were trying harder to-day, to make the
school-room pleasant or not, but I felt as if buoyed up on wings;
I felt as if surrounded by personal friends. Frank Benson, who
yesterday could not tell what a regular verb is, to-day led the
class, until one of them unable to hold in longer clapped his
hands and cried, "Good boy." The singing was perfect. All
the exercises passed off beautifully, and yet I had said no more.

The time for dismissal was fast approaching; I saw several
steal looks at me as if they expected some appreciation of the
efforts they had evidently made.

"What sort of a day have we had to-day?"

"First-rate." "Couldn't be better." "A 1," etc.

So it strikes me. Why has it been so good a day? Can we
take a patent on it so as to have such days all the time? I'd like
to know what made it so good.

A hand was raised by a younger pupil.

"I think we all tried."

Another hand was up.

"You said you were impatient yesterday. I know I have tried
to be very patient."

Who have had trials of their patience?

Many hands went up.

"I see, I see. That tells the story. You and I had trials of
our patience yesterday, and we gave way; to-day we had trials
and we sturdily wouldn't give way. We stood our ground, eh?"

"Yes, sir, that's it."

Every face wore a smile, now. Still it was time for dismissal;
promptness in dismissing on time wins respect; so the bell rang;
they went home happy, and left me happy.

Questions in Physiology.

The questions here given will furnish material for discussion for a month. Let the teacher propose the question a day in advance. It may be written on the blackboard, or the older pupils may put it in their memorandum books—which all the older pupils should have and be taught to use at the proper time. The teacher will not give the question, but ask a pupil to state it. Then other pupils will give answers. Finally the teacher will give the right answer and correct misstatements and errors.

1. If a hair is plucked out will it grow again?
2. What causes the hair to stand on end when we are frightened?
3. What colored clothing is best adapted to all seasons?
4. What is the effect of paint and powder on the skin?
5. Is it healthful to wear waterproof clothing constantly?
6. Why do fowls shake out their feathers before they perch?
7. Why do we perspire profusely after drinking cold water?
8. What causes the hands of the blacksmith to become hard?
9. Why should the painter not get paint in the palm of his hand?
10. Which teeth cut like a chisel?
11. Why not crack nuts with our teeth?
12. Why is the outer surface of a kid glove finer than the inside?
13. Should you take a cold bath when fatigued?
14. Why are men more frequently bald than women?
15. Why take off our overcoats when we come into a warm room?
16. Why do we tire when we stand erect?

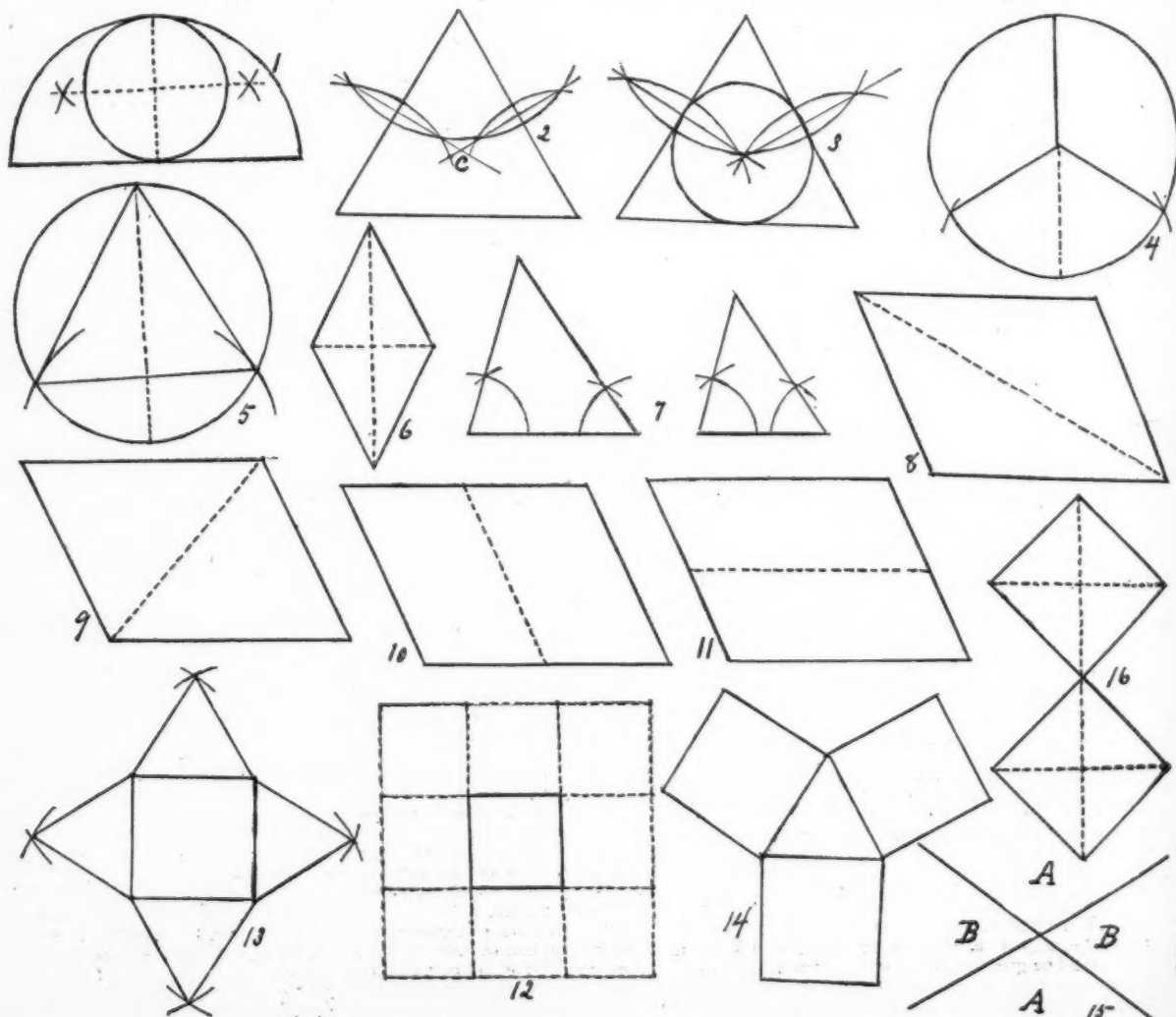
17. Why is dancing a pleasurable exercise?
18. In eating do we move the upper jaw?
19. Why do we lean forward when we rise from a chair?
20. Why can we see our breath on a frosty morning?
21. Why should bed clothes be aired before the bed is remade?
22. Why is a spare bed generally not healthful?
23. Are bed curtains healthful?
24. Why do we gape when sleepy?
25. How would you treat a severe burn?
26. Is it healthful to live in an unventilated room?
27. What is the effect of breathing impure air?
28. Of drinking impure water?
29. How is the water in a well contaminated?
30. Is it needful for so many persons to die at an early age?

Key to Inventional Geometry.

(See questions on page 611.)

- (2) The diameter of the circle is half the length of that of the semicircle.
- (4) Bisect any two sides of the triangle as shown in Fig. 2. The point within the triangle where the two bisecting lines cut each other, will be the center of the triangle.
- (7) Distance from center of triangle to middle point of other side of the triangle.
- (12) Radius equal to radius of the circle.
- (32) When two lines intersect each other the vertical or opposite angles are equal.

(Answers to the remaining questions will be found in cut on this page.)



Brief Replies.

M. C.—If the little eight-year-old girl "positively never obeys a command without great trouble," I should very carefully avoid giving her a command. Circumvent her, when you can do so without lowering your dignity. As to breaking her will, don't! She would be good for nothing without that very will. It is your business to direct that will in the right direction.

M. A. H.—You need to forget yourself. Can't you learn to let go, to slacken the tension? The more you think about your nervous state the worse you will be. When you go home from school don't sit down and count the things which have worried you during the day. Don't read, don't write. Put on a loose wrapper and slippers, let your hair down, and lie flat on your back with your eyes shut. Don't think, you can train yourself to stop thinking. Forget that you ever did anything or that you ever have anything to do again. Take a salt water bath every morning, and eat plenty of fruit and fresh vegetables, tomatoes, lettuce, and asparagus, and coarse bread. Be out of doors in the sunshine all you can. Above all learn to rest. It is a fine art. Don't borrow trouble, and don't try to do to-morrow's work to-day. If things go "contrary" take this for your motto—"To-morrow will be a new day." If you follow these rules you need not fear nervous prostration. Two good books for you to read are "Power Through Repose," and "As a Matter of Course," by Annie Payson Call. (Published by Roberts Brothers.) You will find a new gospel in them. Every nervous, overworked teacher should read them.

H. C.—If you have few funds for a school library, buy paper-covered books, and bind them yourself. Paste very thin paste-board or thick paper inside the covers, and paste a strip of muslin over the back, letting it project a half inch over the sides. If the muslin is of a color to harmonize with the cover, and the work is carefully done, the book will be very neat. You can buy many excellent books in paper bindings for ten, or even five cents. Make up your mind to have a library at all hazards.

I. H. M.—Use sarcasm? Never, under any circumstances. Just think how you would like it if you were a pupil, and a teacher used it on you. It is adding fuel to fire.

E. W.—Why do you not go to a summer school to "brush up"? You'll find that it does not tire you. You have Goethe for authority that,

"Rest is not quitting the busy career;
Rest is the fitting of self to one's sphere."

Look in THE JOURNAL for a list of schools, and write for circulars.

G. P.—Are you sure that the boy knows that he is telling lies? There are lies and lies, you know. Perhaps he has too large a bump of imagination. So long as his stories are perfectly harmless don't notice them. If you contradict him he will only repeat it. He will probably outgrow the habit. Or he may be an embryo Haggard.

1. How many officers in the diplomatic and consular service, and how do their salaries range respectively? 2. Give the names of the members of Cleveland's cabinet.

X. Y. Z.

1. The ambassadors to France, Great Britain, and Germany get \$17,500 a year; the one to Italy \$12,000. The ministers to over thirty other countries get from \$4,000 to \$17,500 per year. Consuls-general to twenty-four countries receive from \$2,000 to \$6,000. The nineteen secretaries of legation get from \$1,800 to \$2,625. Then there are about sixty-five consuls in the principal cities that receive from \$1,500 to \$5,000. 2. Richard Olney, secretary of state; John G. Carlisle, secretary of the treasury; Daniel S. Lamont, secretary of war; Judson Harmon, attorney-general; Wm. L. Wilson, postmaster-general; Hilary A. Herbert, secretary of the navy; Hoke Smith, secretary of the interior; J. Sterling Morton, secretary of agriculture.

What is meant by creoles; are they confined to the white or colored race or to both races?

C. L. T.

A pure *creole* is a person of Spanish or French descent, who is a native inhabitant of Louisiana, or one of the states adjoining, bordering on the Gulf of Mexico. Natives of those states of mixed blood sometimes apply the term to themselves, but it is not conceded to them by those of pure French or Spanish descent.

Please give a short sketch of the work of the Congress lasting from Dec. 1889 to 1891.

L. M.

The Fifty-first Congress (1889-91) passed the McKinley tariff act; a bill to increase the pensions of certain soldiers and sailors who are totally helpless from injuries received or diseases contracted while in the service; a bill to protect trade and commerce from unlawful restraints and monopolies; an international copyright bill; the silver purchase bill, etc.

Examination Questions.

These questions well studied will make the teacher thorough (1) in the subjects he must teach; (2) in the subjects on which he will be examined. Those prepared by the Department of Public Instruction in the State of New York are given; they are recognized as national (except Current Events). Below are the questions used in the Uniform Examinations for Second and Third Grades, April, 1896.

Second and Third Grades.

CIVIL GOVERNMENT.

- (a) What are taxes? (b) Give an example of an indirect tax.
- (a) What is the duty of the town collector? (b) How is he paid?
- What is meant by (a) majority and (b) plurality in an election?
- (a) Distinguish between a civil and a criminal action. Define (b) suffrage; (c) constitution.
- (a) Are courts of any service to people who never come before them? (b) Give reason for your answer.
- (a) Distinguish between a pure democracy and government by representation. (b) Would the former be possible in this country? (c) Give reason for your answer.
- What are the various stages through which a bill must pass to become a law in this state?
- What constitutes the electoral college?
- What powers are granted to Congress by the Constitution over (a) postal affairs; (b) money; (c) taxes; (d) the District of Columbia?
- What is meant by protective tariff?

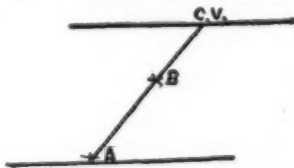
DRAWING.

(The measure of all work shall be at least one inch.)

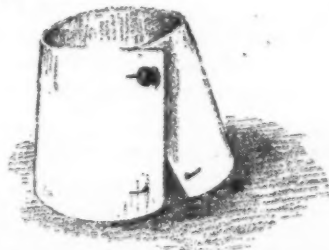
- (a) What name is applied to a regular arrangement of any color with its tints and shades? (b) In the spectrum of eighteen colors, name in their order, the colors which appear between blue and red violet.
1. _____ State for what purpose each of the lines 1, 2, 3, and 4 are used in a "working drawing."
2. _____
3. _____
4. _____
- Copy outline given and finish to represent a glass half filled with water.



- Sketch (a) a cube; (b) modify to represent a four-legged stool.
- Draw a diagram representing the scope of vision, center of visions and the eye level in their respective positions.
- A and B are the perspective positions of two poles. The pole at A will be represented 2" high. The pole at B is the same height as that at A. Draw to represent the two poles.



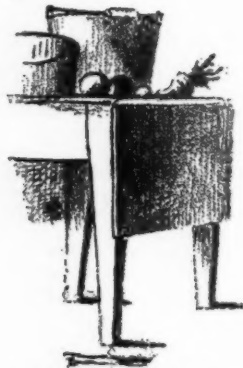
- Draw a longitudinal cross section of a common penholder.
- Draw a pattern of the cuff indicated in the sketch. Diameter, $\frac{3}{4}$ "; height, 1".



- Conventionalize the leaf here indicated, and produce a bilateral unit.



10. Copy sketch given.



AMERICAN HISTORY.

1. What is the date of (a) the discovery of America, (b) the settlement of Jamestown, (c) the breaking out of the French and Indian war, (d) the breaking out of the Revolution?
2. For what were the following persons famous in the early history of Virginia: Sir Walter Raleigh, Powhatan, Sir William Berkeley, Nathaniel Bacon? Select for answer any three of the four mentioned names.
3. (a) What nation colonized Georgia? (b) What nation then held the neighboring colony of Florida?
4. Why was the Niagara river an important point in the French and Indian war?
5. (a) What was the Boston Port Bill? (b) By whom and for what purpose was it passed?
6. Describe the route by which the army of Burgoyne reached the battle fields of Saratoga.
7. (a) What was the object of the embargo laid in Jefferson's administration? (b) What was its effect on our commerce?
8. What was the subject of dispute which led to the war between this country and Mexico? (b) Why were the people of the South generally in favor of waging that war?
9. Give an account of a naval engagement of the Civil war other than that of the *Monitor* and *Merrimac*.
10. What disaster has in the last twenty-five years visited (a) Chicago, (b) Charleston, South Carolina, and (c) Johnstown, Pennsylvania?

METHODS AND SCHOOL ECONOMY.

1. Name three conditions that should receive attention in caring for the physical welfare of the pupil.
2. What should be the chief purpose of discipline, as regards the school?
3. Name two special advantages of written spelling.
4. Name two purposes of arithmetical study.
5. Should a person who uses tobacco be employed to teach school? Give a reason for your answer.
6. When should the teacher begin to train the pupil in the art of correct expression?
7. Mention two facts of geography that can be best taught by the use of a globe.
8. What special preparation should the teacher make for the reading lesson?
9. How should correct pronunciation be taught?
10. Suggest a method for developing the pattern of a cube.

CURRENT TOPICS.

1. What important excise law has been enacted by the present legislature?
2. Name three important provisions of this measure.
3. What was the cause of the recent trouble in the Kentucky state legislature?
4. What action has Congress taken on the Cuban question?
5. (a) Name four men prominently considered in connection with the presidential nomination for the coming election; (b) the state of which each is a resident; (c) the political party of which each is a member.

6. What was the result of the meeting of the Italian and Abyssinian troops at Adowa, about March 1, last?
7. What distinguished soldier of a foreign country recently visited this country?
8. What is the "Greater New York Bill"?
9. Why were American consulates in many parts of Spain recently attacked by mobs of students and other citizens of Spain?
10. The one hundredth birthday of what distinguished educator will occur May 4, next?
11. When will Arbor day occur?
12. What ancient games have recently been revived in Greece in which several American colleges were represented?

ARITHMETIC.

1. Divide 141 rd. 1 yd. 2 ft. 6 in. by 8.
2. (a) Express $\frac{3}{4}$ in the form of a common fraction and in the form of a decimal.
(b) Express in words $\frac{2}{3}$, 600,0002.
3. Find the square root of .000071, correct to four places.
4. The factors of the dividend are 18 $\frac{1}{2}$, 15, 24 $\frac{1}{2}$, and 7 $\frac{1}{2}$, while those of the divisor are 17 $\frac{1}{2}$, 8 $\frac{1}{2}$, and 14 $\frac{1}{2}$. Find the quotient by cancellation.
5. A hardware merchant sold two stoves for \$30 each, gaining 20% on one and losing 14 $\frac{1}{2}$ % on the other. How much did the stoves cost him?
6. A stock of goods valued at \$18,500 is insured for $\frac{3}{4}$ of its value, at 1 $\frac{1}{2}$ %. Find the premium.
7. Find the net proceeds of a sale of 50 shares of United States express stock at 38, brokerage $\frac{1}{2}$ %.
8. If the interest on \$100 for 3 yr. 4 mo., at 6% per annum is \$20, for how long must \$350 remain at interest at 4 $\frac{1}{2}$ % per annum to produce \$42? (Solve by proportion.)
9. A buggy listed at \$125, 30 and 8 off, is sold on 90 days time 5% discount for cash. Find the cash price of the buggy.
10. Find the cost of 24 planks 16 feet long, 14 inches wide, and 2 $\frac{1}{2}$ inches thick, at \$23 50 per M. board measure.

GEOGRAPHY.

1. If the temperate zones were 50° in width, what would be the inclination in degrees of the earth's axis?
2. Locate the four chief cities of Canada.
3. Locate by counties the following villages of New York: (a) Richfield Springs, (b) Saratoga Springs, (c) Canandaigua, (d) Plattsburg, (e) Malone. Select for answer any three of the five mentioned places.
4. Name four rivers of New York rising in the Adirondack mountains, and tell into what water each flows.
5. (a) What river between South Carolina and Georgia; (b) between Washington and Oregon; (c) between Arizona and Nevada?
6. (a) Locate Chile. (b) Describe its seacoast. (c) Name two chief productions.
7. Where and what is each of the following: (a) Trinidad, (b) Tokio, (c) Dardanelles, (d) Stockholm, (e) Halifax?
8. (a) Name the four countries of Africa bordering on the Mediterranean sea. (b) Name a chief city of each.
9. (a) What country of Europe is noted for its low elevation? (b) What bay indents its coast? (c) What is its metropolis?
10. Name three things which chiefly affect the climate of a country.

GRAMMAR.

- 1 One who has never taught learns little from visiting another's
- 2 school, in comparison with him who there sees his own errors
- 3 in a new light, and finds methods and devices for which he has
- 4 sought in vain, and which he may put to a wiser use in increasing his own efficiency and worth.—George Howland.

The first seven questions refer to the above selection.

In order to secure some degree of uniformity in answer papers, it is recommended that candidates observe the following suggestions:

- NOTES.—1. A combination of subject and predicate is called a clause. Clauses are principal or subordinate.
2. Subordinate clauses include (1) subject clauses; (b) objective clauses; (c) adjective clauses; (d) adverbial clauses.
3. In naming a clause, include only its unmodified subject and unmodified predicate.
4. A preposition with its object is called a phrase.
5. In naming a phrase, give only the preposition and its unmodified object.
6. A modifier may be a word, phrase or clause.
7. An object of a transitive verb is called a modifier of that verb.
8. Only eight parts of speech are recognized—the articles *the* and *a* forming a subdivision of adjectives, and participles being one of the forms of verbs.
9. Infinitives are classed as modes of the verb.
10. In parsing a noun or pronoun, observe the following order: class, person, number, gender, case. Give the reason for case. In parsing a relative pronoun, state the agreement with its antecedent.
11. In giving the syntax of a noun or pronoun, give only the case and the reason for it.
12. Treat verbs as divided into two classes only, viz.: transitive and intransitive; a transitive verb may be used in the active or the passive voice.
13. In parsing a verb, observe the following order: principal parts, regular or irregular, transitive or intransitive, voice, mode, tense, person, number, agreement; give the special use of an infinitive or a participle after tense.

1. Classify the following clauses according to note 1: (a) *One learns* (line 1); (b) *Who has taught* (line 1); (c) *Who sees* (line 2); (d) *He has sought* (lines 3 and 4); (e) *He may put* (line 4).

2. Give (a) two modifiers of *learns* (line 1); (b) two modifiers of *has sought* (lines 3 and 4).

3. (a) Select two participles. (b) Give the syntax of each.

4. Select all the adjectives, indicating such as are (a) pronominal adjectives, (adjective pronouns), and (b) in the comparative degree.

5. Parse *who* (line 1).

6. Give the syntax of (a) *one* (line 1); (b) *another's* (line 1) (c) *worth* (line 5).

7. Select a verb (a) in the potential mode, present tense; (b) indicative present; (c) indicative perfect.

8. Decline the personal pronoun of the second person.

9. Write a sentence containing a clause used as attribute (predicate noun).

10. (a) Write a sentence having *than* immediately followed by a personal pronoun. (b) Give the syntax of the pronoun.

COMPOSITION.

Write a composition on one of the following subjects:

- The Lakes of New York.
- Summer Schools.
- An Experience in a Storm.
- The Modern Newspaper.

Credits will be given on the merits of the composition with particular reference to three points.

1. The matter *i. e.*, the thought expressed.
2. The correctness and propriety of the language used.
3. The orthography, punctuation, division into paragraphs, use of capitals, and general appearance.

PHYSIOLOGY AND HYGIENE.

1. How do the bones of a person differ, in respect to composition and flexibility, in childhood, in middle life, and old age?

2. The muscles attached to the skeleton generally have attachments to more than one bone. Explain the necessity for this and illustrate by referring to the biceps muscle.

3. Compare the skin with the mucous membrane with respect to (a) secretions; (b) location.

4. What is separated from the blood by (a) the liver; (b) the lachrymal glands; (c) the kidneys?

5. If breathing were suspended for one or two minutes what would be the effect upon the blood in the lungs?

6. (a) Into what large vein do the absorbent blood vessels of the stomach and intestines unite? (b) What artery leads from the left ventricle of the heart?

7. (a) Why should one refrain from eating food or drinking fluid that has been left exposed in a room where a person is suffering from a contagious or infectious disease? (b) State a simple means of disinfecting a room where a contagious disease has prevailed.

8. (a) Mention two digestive fluids which act upon the food in the alimentary canal before it passes the pylorus. (b) What food elements does each of these fluids respectively digest?

9. Give three rules referring to the proper care of the teeth.

10. (a) For what two purposes is opium commonly administered by physicians? Mention two of the harmful effects produced by its continued use.

READING.

To be supplied by the examiner.

Answers.

CIVIL GOVERNMENT.

1. (a) Contributions of money exacted by governments from individuals for public purposes (b) A tax on an imported article.

2. (a) To collect the moneys owing to the town. (b) By a certain rate per cent. on all moneys collected.

3. (a) By a majority is meant a number representing more than one-half the total number of votes cast. (b) By a plurality is meant a number exceeding the number of votes cast for any one else.

4. (a) A civil action is an action instituted for the recovery of money, and a criminal action is one instituted for the punishment of one who has committed a crime. (b) Suffrage is the right to vote. (c) A constitution is an instrument, either written or printed, containing a set of laws for the government of any organization.

5. (a) Yes. (b) The very fact of their existence is deterrent to evil-doers.

6. (a) A pure democracy is a government by the people themselves because all have an opportunity to express their opinion, to vote on all matters of public concern. A government by representation is a government by representatives elected by the people. (b) Yes; in the town meetings of very small communities, but not in the United States or in any state as a whole. (c) 1. Because all could not meet in one place have opportunity to ex-

press their opinion and vote. 2. The difficulty of assembly alone would be sufficient to prevent.

7. It is first introduced by a member before the house; referred to a committee who report upon it; advanced to third reading; voted upon; signed by the presiding officer, and sent to the other house where the same formalities are gone through. If affecting some city, it is sent to the mayor of that city, who, approves, and sends it back to the governor for his signature. If he vetoes, or simply ignores, it must be repassed and sent to the governor. If the governor vetoes it may be repassed over his veto or become a law.

8. Each state selects as many picked men as the number of its senators and representatives together. These leading citizens from all the states constitute the Electoral college.

9. (a) To establish post-offices and post roads. (b) To coin money, regulate the value thereof, and of foreign coin. (c) To lay and collect taxes. (d) To exercise exclusive legislation in all cases whatsoever over it.

10. A duty upon imported articles to protect and foster home manufacture.

HISTORY.

1. (a) 1492 (b) 1607. (c) 1753. (d) 1775.

2. Sir Walter Raleigh—sent out two vessels under command of Amidas and Barlow who gave glowing accounts of the country seen by them. Queen Elizabeth declared this event to be the most glorious of her reign, and, as memorial of her unmarried state, named the region Virginia.

Powhatan, chief of Indians.—Captain John Smith, when captured, was brought before him, who met with the other warriors in council and determined that Smith should be executed.

Sir William Berkeley, governor of Virginia, noted for his tyranny.

Nathaniel Bacon—noted for rebelling against Berkeley's tyranny.

3. (a) The English. (b) The Spanish.

4. Because it afforded easy communication with Canada.

5. (a) A bill passed closing the port of Boston and removing the custom house to Salem. (b) By the English parliament, to punish the Bostonians for throwing overboard the tea shipped to Boston.

6. Started from Canada, sailed up Lake Champlain to its head, whence he marched to Fort Edward on the Hudson. Crossed the Hudson and advanced to Saratoga.

7. (a) To forbid American vessels to leave the ports of United States. (b) Very injurious.

8. (a) The annexation of Texas. (b) Because it would give them another slave state.

9. The *Alabama*, commanded by Captain Semmes, sailed into one of the harbors of France where she was blockaded by the *Kearsarge*, commanded by Captain Winslow. After an engagement of one hour and a quarter, which took place about five miles from the shore, the *Alabama* was sunk.

10. (a) A great fire. (b) An earthquake. (c) A flood.

METHODS AND SCHOOL ECONOMY.

1. Ventilation, illumination, and posture.

2. To secure moral habit or develop character.

3. (a) Focusing of energies? The eye sees what the fingers do; the mind synthesizes and therefore retains more faithfully. (b) The proper motor habit is induced and so-called automatic spelling attained more readily.

4. (a) To develop the mind. (b) To fit a child for a commercial life.

5. Yes. A person may use tobacco moderately with no impairment of mind or body.

6. At once.

7. Latitude and longitude. Alternation of night and day.

8. Familiarize himself with the words, idiomatic expressions, allusions and the thoughts of the writer; and discover what is already known by the class and what needs to be apperceived.

9. By pronouncing the words for the pupils first, (the pronunciation of course to correspond with that given in standard dictionaries) and in careful and progressive study of diacritical marks.

10. Distribute materials for drawing. After pupils have drawn on their papers the necessary figures, then ask them to fold in accordance with instructions of teacher who folds his paper before the whole class. That done, then question as to the faces, edges, corners. And when the desired answers have been elicited, tell them that a box, having six such faces, six corners, and twelve edges is called a cube.

CURRENT TOPICS.

1. Raines Excise Law.

2. The payment of \$300 for a license. No saloon to be within a distance of 200 feet from a school or a church. No free lunches.

3. The two houses could not agree on a representative to the United States senate.

4. Congress voted for recognition of Cuba as a belligerent power.

5. Major McKinley, Ohio, Republican; Thomas B. Reed,

Maine, Republican; William E. Russell, Massachusetts, Democratic; David B. Hill, New York, Democratic.

6. Disastrous to the Italians.
7. Yamagata of Japan.
8. It is a bill contemplating the annexation of Brooklyn, Long Island City, Kings, Richmond, and major part of Queens counties to New York.
9. Because of the sympathy of the Americans for Cuba, and the vote by the House of Representatives in favor of recognition of belligerency.
10. Horace Mann.
11. May 8.
12. The Olympic games.

ARITHMETIC.

1. Rods, yds., ft.
17 3 2
2. (a) $\frac{7}{1000}$; .007. (b) Two hundred nine four hundred fourths. Six hundred, and two ten-thousandths.
3. .0084.
4. $17\frac{1}{4}$.
5. \$25 and \$35.
6. \$177.60.
7. \$1897.624.
8. 2 yrs. 8 mo.
9. \$76.475.
10. \$23.688.

GEOGRAPHY.

1. 20°.
2. Montreal.—Southwest part of Quebec, on the St. Lawrence river.
Toronto.—Southeast part of Ontario, on Lake Ontario.
Quebec.—Southwest part of Quebec, on the St. Lawrence river.
Hamilton.—Southeast part of Ontario, on Lake Ontario
3. (a) Otsego; (b) Saratoga; (c) Ontario; (d) Clinton; (e) Franklin.
4. Hudson—into New York Bay.
Saratoga— " Lake Champlain.
St. Regis— " St. Lawrence river.
Racket— " " "
5. (a) Savannah. (b) Columbia. (c) Colorado.
6. (a) Southwest part of South America. (b) Broken. (c) Copper and salt-peter.
7. (a) Near mouth of Orinoco river—an island. (b) On island of Hondo (Japan)—capital of Japanese Empire. (c) Between Asia and European Turkey; a strait. (d) Southeast part of Sweden—capital. (e) East part of Nova Scotia—capital.
8. Egypt—Cairo.
Tripoli—Tripoli.
Tunis—Tunis.
Algeria—Algiers.
9. (a) Netherlands. (b) Zuyder Zee. (c) Amsterdam.
10. (a) Distance from the equator. (b) Elevation above sea level. (c) Prevailing winds and ocean currents. (d) Distance from sea-coast.

GRAMMAR.

1. (a) Principal; (b) subordinate; (c) subordinate; (d) subordinate; (e) subordinate.
2. (a) "Little;" "from visiting another's school," adverbial phrase.—(b) "in vain" and "for which,"—adverbial phrases.
3. "visiting"—governed by preposition "from"
4. "increasing,"—governed by preposition "in."
4. "One," "another's," "own," pronominal adjectives; "new,"—(common); "wise" (common in comparative degree); "own," (pronominal).
5. "Who"—relative pronoun—agrees with antecedent "one" in third person, singular number, masculine gender by preference; it is in the nominative case, because it is the subject of verb "has taught."
6. (a) "One," nominative case, subject of verb "learns;" (b) "another's," possessive case, governed by noun "school;" (c) "worth," objective case, governed by participle "increasing."
7. (a) "May put;" (b) "learns;" (c) "has sought."
8. Singular { *Nom.*—Thou. { You, }
 { *Poss.*—Thy or thine. { Your or yours, } Plural.
 { *Obj.*—Thee. { You. }
9. Our intention is, that this work shall be well done. (Work shall be done = att. clause)
10. Henry ranks higher than he; he—nominative case, subject of verb "ranks" understood.

PHYSIOLOGY AND HYGIENE.

1. In middle life the proportion of animal substances is about one-third; in childhood this proportion is far greater. But in old age the proportion of mineral substances is in excess.
2. The force generated by a contraction of the biceps is applied to the bones through the intervention of the tendon which is attached to the bone of the forearm.
3. (a) Glands of skin secrete oily substance to which lubricates the skin. Glands of mucous membrane secrete mucous. (b) Skin is an external covering. Mucous membrane is an internal covering.
4. (a) Bile. (b) The moisture furnished to the conjunctiva. (c) The urea and other deleterious substances.
5. It would become venous, because the carbonic acid gas was not expelled.
6. (a) The portal. (b) The aorta.
7. (a) Because the food or fluid may be contaminated by the germs floating in the air. (b) Close all windows and doors, stop up all crevices. In the center of the room place a dish containing burning sulphur and brimstone.
8. (a) The saliva and the gastric juice. (b) The saliva—starch and sugar. The gastric juice—albumen, gluten, casein, fibrin.
9. Avoid exposing the teeth to sudden changes of temperature. Do not injure the teeth by biting hard substances. At night before going to bed, on rising in the morning, and after each meal, the teeth should be washed with water and tooth-brush.
10. (a) To induce sleep and deaden pain. (b) Disease of the digestive organs and impairment of the heart's action.

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New Books.

It is often asserted that humanity does not like to be preached to, but that depends altogether on the way in which the preaching is done. Some time ago Sylvannus Stall, D. D., published a volume of Five-Minute Observation Sermons to Children, whose great success was immediate. On account of the manner in which the subjects were treated they did not seem like sermons, but familiar talks to boys and girls. The secret of the charm of these chapters was the free use of illustrations and the familiar and limpid style that is so simple that children have no trouble in getting at the meaning. A second volume prepared on the same plan, just published, bears the title of *Talks to the King's Children*. In this he draws lessons from crowns, nuts, leaves, coral, fish, asbestos, olives, seeds, the phonograph, salt, and other objects, and enforces them by quotations from scripture. It is a good book to place in the school, Sunday-school, or school library. (Funk & Wagnalls Co., New York \$1.00.)

What One Can do with a Chafing-Dish, a guide for amateur cooks, by H. L. S., of which a revised and enlarged edition has just been published, will be a revelation to many who love delicately prepared viands. It has over a hundred recipes for cooking a great variety of things. (John Ireland, New York.)

Ginn & Co. issue in the International Modern Language series selections from the literary and dramatic criticisms of Jules Lemaitre, edit d with a literary notice and notes by Rosine Mellé, *diplomée de l'Université de France, teacher of French at Ogontz school, (Pa.)*. The literary notice aims to give an idea of the versatility of Jules Lemaitre's talent, of the brilliancy of his style, and of his charming personality. Jules Lemaitre has kindly given his approbation to this little book, and has written for it a very interesting introduction on "La Critique impressionniste."

Interesting Notes.

The manufacturing development of the South is marvelous to one who looks at the facts and figures. Take cotton for an illustration. There is scarcely a large town in either North or South Carolina which does not boast of at least one cotton mill. In a single decade—from 1880 to 1890—the capital invested in this single industry in the Southern states increased from \$21,900,000 to \$97,000,000; and the establishments now under construction will in a few months swell this amount to \$106,000,000. At this rate the North will soon realize that a very successful competitor in a part of its work—the manufacture of the coarser cottons—is in the field.

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In an old homestead in central New York is a family of cats which have been, during forty years or more, bred with care to perpetuate a peculiarity. Many of them have had six toes on each foot; nearly all have had six toes on each fore foot.

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I estimate that there are at present 300 Europeans, inclusive of missionaries, in French Congo; 150 in British East Africa, 350 in British Central Africa, 250 in German East Africa, and 1,400 in Belgian Congo—altogether, say, 2,500 Europeans between the Zambesi and the Nile. The railways about to be constructed in British East and Central Africa and the German possessions will be the means of attracting several hundred more, just as the Congo Railway has been the cause of the greater European population in the Congo state; and since roadless Africa during the last ten years has at-

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tracted so many whites, it needs no prophet to predict that where one white traveled during its primitive state a hundred will travel by railway. There are now only about 130 miles of railway within the limits of Equatorial Africa; but at the end of ten years from now we shall have the Congo railway, 250 miles long; the Stanley Falls railway, 30 miles; the Mombasa-Nyanza railway, 660 miles; the Shire-Nyassa railway, 70 miles; the German Usambara railway, 120 miles, and probably the Nyassa-Tanganyika railway, 220 miles, in complete working order.—Henry M. Stanley, in *Century Magazine*.

Graphite for Cycle Chains.

No material has so strong an affinity for iron and steel as pure, soft flake graphite, and for bicycle chains and sprockets there is nothing equal to it. The Dixon Crucible Company, Jersey City, N. J., selects its choicest material from unlimited stocks, and, after analyzing all other cycle chain lubricants in the market that it could find, does not hesitate to say that Dixon's No. 691 Cycle Chain Graphite is absolutely without an equal for preventing rust and wear of chain and for insuring ease and comfort in riding. Mr. Tom W. Winder, the man who rode 21,000 miles around the borders of the United States, was offered all sorts of chain lubricants, and Dixon's was found superior to anything offered. He says: "It saved me much hard work, as its application never failed to cause an easy running chain." No. 691 is the improved shape and fits the tool-bag easily. If your dealer does not keep it, send 10 cents for a sample, and you will never regret it. Dealers will receive a sample free of charge by sending their business card.

A novel piece of electric railway work is proposed for Brighton, the famous watering-place in the south of England. The idea, broadly stated, is to propel a girder-built vehicle, weighing some sixty tons, and running on four submerged rails, at a speed of about six miles an hour, through a depth of about fifteen feet of sea water, which is generally rough. It is hoped to have the amphibious road in operation in June. The length of the line is apparently not less than three miles. The rails run along the foreshore at a distance of about 150 to 200 yards from the base of the cliff, slightly above low-water mark, and the high tide submerges them full fourteen feet. Instead of two rails connected by tie rods, there are two pairs of fifty-four-pound rails, the distance between the two outermost being eighteen feet. Each pair of rails is of two feet eight and one-half inches gauge, and is laid separately on concrete blocks mortised into the underlying stratum of chalk. Sand is periodically washed away and silted up again around the tracks. The steepest grade is only one-tenth of one per cent, and the sharpest curve has a radius of half a mile.

One of the leading school men of the Northwest, one who has grown in favor because of his fearless work in the cause of true education, is Supt. O. C. Seelye, Racine, Wisconsin. Mr. Seelye succeeded at Racine a man who had filled the superintendency many years, and it was predicted when he entered upon his duties, that his career there would be a brief one. However, he succeeded in winning the confidence of his board and the patrons of the schools, and has for the last four years been unanimously re-elected, and everything seemed favorable for his continuance in this position for an indefinite period. The board at La Porte, Indiana, having learned of his good work at Racine, tendered him the superintendency there at an increase in salary, and he has just accepted. There is probably no man better fitted to walk in the

footsteps of Dr. H. N. Hailmann, who was long superintendent at La Porte, and who gave the schools of that city a national reputation. Mr. Seelye was elected to this position through the instrumentality of the Albert & Clark Teachers' Agency of Chicago.

In the normal state a dog executes 20 to 30 respiratory movements a minute, but while he is excited or is running in the heat of the sun this increases to 300 or 350. M. Charles Richet, says *L'Eleveur*, who has investigated the causes of this acceleration, has reached the conclusion that it favors pulmonary evaporation and the cooling of the body. It is thus a sort of pulmonary perspiration. M. Richet has proved by weighing that a dog whose respiration is thus quickened by tenfold loses in one hour 13 grams (about 200 grains) of water vapor to every kilogram (.6 pound) of weight of his body, representing a loss of heat of 6,000 calories—that is, the heat necessary to raise six quarts of water one degree in temperature. The acceleration of breathing is a means of cooling, making up for the dog's lack of perspiration. Dogs thus perspire through the tongue, as the popular saying has it.—*The Literary Digest*.

Few things are more extraordinary than the sudden growth of Russian interest in Abyssinia. When the first Russian adventurers went to that country they were ridiculed as madmen. Even quite recently the Russian government disclaimed all interest in the movement for establishing a tie between the Russian and Abyssinian churches. But now Abyssinia is regarded almost as if it were an African Montenegro; and collections are being made throughout Russia for the sick and wounded Abyssinians just as if they had been Slavs or Greek Orthodox. There are said to be any number of French and Russian officers in the Abyssinian camp, and the victory of King Menelik has been hailed in Moscow and St. Petersburg with almost as much enthusiasm as if he had been a feudatory of the czar's. It is a very interesting and somewhat romantic piece of political adventure. But it will not come to much, for a power like Russia that does not possess a supreme navy can never gain much influence in a distant country like Abyssinia that has no seaport; although, no doubt, as the Transvaal shows, they can help to make trouble.—*Review of Reviews*.

Ice Work, Present and Past, is the title of an important new volume in the International Scientific Series, by Dr. T. G. Bonney, professor of geology at University College, London, which is to be published shortly by D. Appleton & Co.

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Literary Notes.

Roberts Brothers have published recently *Guns and Cavalry*, their performance in the past and their prospect in the future, by Major E. S. May, R. A., a book which gives an account of the united action of cavalry and artillery as illustrated by examples from military history, the principles which underlie their training together in the past, and the tactics which should be adopted to insure their due co-operation in the future; and *Paragraph History of the United States*, new revised edition brought down to 1896.

Harper & Brothers have recently issued the third and fourth volume of the *Memoirs of Barras*; Max Pemberton's story entitled *A Gentleman's Gentleman*; Thomas Hardy's *Desperate Remedies* (new edition); a popular edition of Lloyd's *Wealth against Commonwealth*; and a series of light studies or sketches of types of suburban residents, entitled *Out of Town*. The authorship of the last-mentioned book is not disclosed; its numerous illustrations are by Rosina Emmet Sherwood.

A series of books giving "Natural Science in Simple Stories" is being issued by the University Publishing Co., New York. These books are most beautifully illustrated and wonderfully attractive. Interesting facts about plant and animal life are woven into charming stories, well graded, and judiciously interspersed with other reading matter.

Mr. Shorter, the well known editor of the *Illustrated London News*, etc., is to publish shortly a book on the Brontës, which has long been looked forward to in literary circles. The article in the June *Bookman* will be read with universal interest. It contains many hitherto unpublished letters from Charlotte Brontë to Mrs. Gaskell, Miss Nussey, and others. Fresh light is thrown on the Brontës' life in Brussels. The article is illustrated with portraits of Mrs. Gaskell; Charlotte Brontë's husband; the Rev. A. B. Nicholls, whom Mr. Shorter has visited many times in his Irish home; of the three sisters Charlotte, Emily, and Anne, and of their father, Patrick Brontë.

D. C. Heath & Co., Boston, are about to issue in "Heath's Modern Language Series" *Aus Herz und Welt*, two little stories: one, *Hundert Schimmel*, by Nathaly von Eschstruth; the other, *Alle Fuenf*, by Helene Stökl, with full notes by Dr. Wilhelm Bernhardt, director of German Instruction in the high schools of Washington, D. C. These stories by two of the most popular novelists of Germany, have been selected because they are rich in modern colloquial German, as well as interesting to readers in themselves.

Robert Louis Stevenson's unfinished romance, *Weir of Hermiston*, has been published by the Scribners. In no case of an unfinished romance has an author left so full a forecast of his intention. Mr. Stevenson had outlined to his amanuensis, Mrs. Strong, the plot of what remained unwritten, and by her aid an editorial note of nearly twenty pages gives it so fully that the reader is left in no doubt of the result or of the fate of any of the characters.

How shall the little child in your school be given a correct literary taste? A question easy to answer. Provide him with reading matter of genuine merit. *Old-Time Stories* (Werner School Book Co.) is of this character; besides, it is written in child language. Its charm is increased by beautiful illustrations in water color. To the child, therefore, it is an æsthetic and intellectual delight.

The Great Arid West.

About one-third of our national area, excluding Alaska, is too arid for cultivation except where water can be put upon the soil by artificial means. General Sherman's danger line of the one hundredth meridian defines pretty closely the western limit of safe farming by rainfall. Thousands of settlers who have gone beyond that line, have found out to their sorrow and cost that it is folly to contend against climate with no weapon but faith. For practical purposes, in defining the extent of the arid area on a map, we may place its western boundary at the Sierra Nevada mountains in California, and the prolongation of that range in Oregon and Washington known as the Cascades. The eastern boundary can not be sharply drawn. There is no mountain wall to cut off the rain-bearing winds. The country is an enormous plain, beginning far up in the British possessions and reaching to the Gulf of Mexico. The rainfall decreases steadily as you go west across this plain, but no stakes can be set to warn the settler that thus far shall he go and no farther. Between the distinctively arid country and the country where there is unquestionably sufficient rainfall for successful agricultural operations year after year, there is a belt of debatable ground varying from 100 to 200 miles in width. The best term for this belt is sub-arid. It extends through the two Dakotas, Nebraska, Kansas, Oklahoma, Indian Territory, and Texas. Some of the counties in Kansas lying within this belt have been populated and depopulated, in a measure, two or three times. One or two years of exceptional rainfall bring in a fresh throng of settlers, to take the place of others who have given up the struggle; they in turn are impoverished by the dry years that are sure to follow, and abandon their farms. Only people who know how to combine stock-raising with grain-growing on a moderate scale are successful in this doubtful territory.

Beyond the sub-arid belt is the vast domain of unquestioned aridity. We may divide this domain into four classes of territory, having reference to the character and utility of the country. First, there are the great grass plains, covered for the most part with bunch grass or grama, the home of the range-cattle and sheep industries. The soil is fertile but nowhere is there rainfall enough for tillage. Our second division embraces all the mountain ranges, which are, of course, out of all calculations for possible future settlement, save where minerals are found in their flanks, or where lumbering camps are established to work up the pine which everywhere extends up to the timber line.

Our third division comprises the enormous desert area which occupies most of the map between the Rockies and the Sierras. Among the acid sage-brush bushes that cover the whole of this dreary region a little grass grows, and where water can be found for flocks and herds the land is not wholly valueless. The greater part of the country, however, is destitute of running streams, and the pools of bitter alkaline water that abound will not quench the thirst of either man or beast. Most of this region is just as absolutely a desert as Sahara.—*Forum*.

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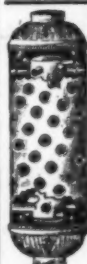
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